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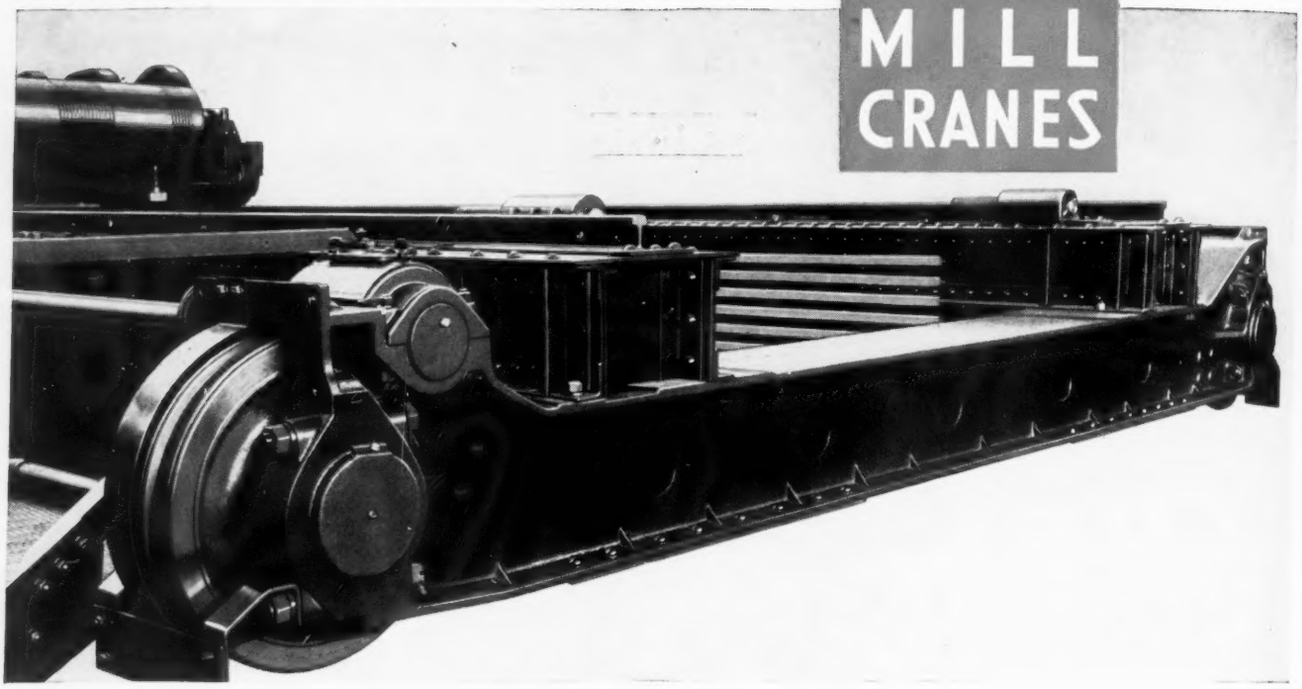

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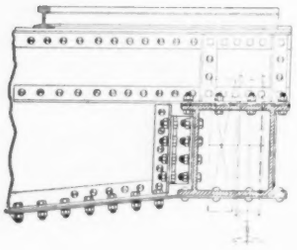

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CONTENTS

May 14, 1931

THIS WEEK IN STEEL 13

Russian Five-Year Plan No Menace to Europe Now 15
Steel Mooring Mast Incorporates Self Propulsion 16
Steel Industry Questions Increasing Freight Rates 17
Authors of Papers for Iron and Steel Institute Meeting 19
April Ingot Rate Falls 9 Per Cent Below March 20
Adopt New Sheet Schedules; Name Hot-Rolled Prices 21

Industrial Men in the Day's News 22
Obituary 23
Here and There in Industry 24
Mirrors of Motordom 25

EDITORIAL—Waste in Home Building Retards Use of Steel 26
THE BUSINESS TREND 27

Effects Economies in Production of Heavy Steel Castings 35
Convention of American Foundrymen's Association 38
Equipment Show of American Foundrymen's Association 40
Vibration of Dross Affords Higher Zinc Recovery 41
Large Uses of Steel in Small Ways—Wire Nails 44
Gliders Make Extensive Use of Steel Construction 46
Press Forms One-Piece Containers from Chrome-Nickel Steel 47
Convention of American Gear Manufacturers' Association 49
Scanning the Technology of Steel 53
Machine Tools and Plant Equipment 55

MARKET SUMMARY 61
MARKET REPORTS AND PRICES 62-92
CONSTRUCTION AND ENTERPRISE 95
NEW TRADE PUBLICATIONS 100
WHERE-TO-BUY DEPARTMENT 101
ADVERTISERS' INDEX 130

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Volume 88 Number 20

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

IMAGINE—if it be possible today—a nation without a vestige of unemployment, whose output of steel and iron is mounting steadily, where new facilities for production cannot be completed fast enough. Politically Russia may be anathema, but industrially it is a relief to turn to her even if conscious that the flush on her industrial picture is somewhat feverish.

Europe, after analyzing Russia's 5-year program for expanding her iron and steel industry, is not disposed to be alarmed (Page 15), this attitude coinciding with that of American executives. This appraisal is contingent, of course, upon the soviet government not exporting steel in a capital-raising venture, as it has wheat and lumber. It is assumed that Russia's internal requirements will absorb her production for many years; she is not enough of a buyer in world markets for her withdrawal to be felt.

Threats of Russia to curtail her equipment purchases, on account of unyielding credit restrictions and the continued baiting of Russo-American trade, appear very real when the Amtorg Trading Corp. discloses (Page 16) that in the six months ended March 31 its awards in the United States declined 45 per cent. . . . And although the engineering talent that is erecting the soviet's new blast furnaces originated largely in Chicago and Cleveland, the latest contract for a stack has been placed (Page 88) in England.

World Steel Markets Sympathetically Low

Russia is a contrast today not only to the United States but also to the remainder of the steel-producing world. France's steelmasters slowly but surely are descending from their lofty market position and are slipping into the mire of depression; at the moment they are distressed (Page 90) because the state-owned railroads are abstaining from the equipment market, thus giving the situation in France a political tinge. . . . In England, Germany, Belgium (Page 88) the receding tide of export business is a serious matter. . . . The Far East, by way of exception, is displaying a temporary affection for American galvanized sheets, largely induced by an ocean freight rate war whose settlement (Page 18) may restore old sources of supply to good standing.

Trucks Speed, Not Impede, Steel Traffic

But there still are goods to be transported in odd corners of the world, as an increase of 130 per cent in American exports of light motor trucks in March indicates (Page 25) . . . . Were the remainder of the world motorized as thoroughly as the United States the general business situation would be noticeably alleviated. The

Photo, Lincoln Electric Co.

Lariats of steel on the Texas "ranges": This welder is sealing a bell joint of a 20-inch pipe, 100 miles long. His helper cleans the preceding bead with a wire brush

—Acme Photo

A steel spider web, 220 feet high, safeguarding those who climb an unusually high stack at the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

motor news from Detroit (Page 25) is that truck production is likely to increase in May and June, while passenger car assembly probably will hold its own . . . . Automobile manufacturers are seeking Washington's assistance (Page 17) in persuading foreign governments to modify alleged discriminatory tariffs on American cars and trucks.

Steel Price Weakness Is Disquieting

Considering the somber tone of first quarter financial reports, the apparently bottomless stock market and continuing, though gentle, recession in demand, sentiment in the steel markets has stood up remarkably well. But this week (Page 61) a new menace appears in more rapid deterioration of prices. . . . Steelmaking operations have surrendered another point (Page 68), to about 47 per cent. . . . Henry Ford, who once bought Belgian rails for his railroad, is buying German sheet piling (Page 82) for his Seattle assembly plant. . . . The Bethlehem-Sheet & Tube merger matter is revived as the hearing (Page 18) on the value of dissenting Sheet & Tube stock is postponed.

Railways to Highways to Waterways

Steelmakers, hoping their markets will not subside much farther, are lukewarm (Page 17) to the trial balloon railroad executives have sent up concerning an increase in freight rates. The steel industry fears a further diversion of traffic to the highways and waterways. . . . This would only further contract the market for rails, the price of which the department of justice (Page 17) continues quietly to investigate. . . . The railroads, however, contend additional revenue is necessary to supply business for foundries, of which one in the East (Page 35), casting locomotive beds in a single piece, is typical.

The Bible and Steel Corp. May Be Wrong

There is good authority, biblically and industrially, for a limitation of three score and ten years on man's activity, yet this week there are two outstanding exceptions. An authority on rolls, mandatorily retired by the United States Steel Corp.'s 70-year plan but unwilling to rust out, assumes (Page 23) an important post with a roll-making company. . . . At 75 the most publicised locomotive builder in the country becomes chairman (Page 22) of an eastern steel interest. . . . Physically both men are hard as nails, no mean simile considering that a good grade of steel, amounting to 1.6 per cent of the country's output of rolled products, was utilized (Page 44) in 1930 in producing more than 9,000,000 100-pound kegs.

Conventions Appear Depression-Proof

Last week the American Foundrymen's association held its annual convention at Chicago, duplicating in practically every detail its 1929 meeting in Chicago, and drew a larger attendance. The explanation may lie in the apparent hunger for economic information, for discussion (Pages 38, 39) of the problems of management and sales rather than of technical subjects. More than 3500 foundrymen inspected exhibits of 167 foundry equipment builders (Page 40) . . . . At the annual convention of the American Gear Manufacturers' association at Buffalo there also was little variation from past attendance. Here too the economic predominated (Page 49) as with standardization well under way commercial more than technical topics engage this group.

Galvanize Less, But More Efficiently

When the hot galvanizing industry in 1930 consumed only 212,100 tons of zinc it fell 25 per cent behind 1929, to the lowest point since 1922 (Page 20). Zinc was cheaper in 1930 than in many years, but coatings were slightly thinner . . . . A cloud was lifted off a portion of the market for galvanized material when the federal trade commission rescinded (Page 18) its complaint against manufacturers of range boilers for sales policies on the Pacific Coast. . . . It is claimed that drossing operations in the average galvanizing plant can be improved 10 to 20 per cent by the use (Page 41) of inexpensive equipment. A vibrator attached to the handle or side of the drossing spoon is more efficient in recovering zinc than cutting or slicing it, and will perform the operation more quickly.

No Menace, Now, to Europe in Soviet 5-Year Steel Plan

BY VINCENT DELPORT
European Manager, STEEL

IF THE small group of men who are responsible for the Soviet 5-year plan realize their ambitious schemes, they will have accomplished a feat as yet unsurpassed in history.

The program laid out for the Russian iron and steel industry calls for an increase in production capacity which is no less than four times the potentialities which existed at the beginning of the 5-year period.

Even if the end is not completely achieved by 1933, it is certain that by that time Russia will have plant and equipment capable of producing several million tons more of steel than in 1928, and that a few years later the actual goal may be reached.

THIS, which is the third article of a series on Russia, is the European appraisal of the Soviet's 5-year program. In STEEL for March 19, page 15, was given the detail of this program for iron and steel; in STEEL for March 26, page 27, this program was related to the American industry.

Briefly, Russia threatens to attain a rank second only to Germany as a European steel producer, and may even surpass her. Russia's current imports are so small that, if withdrawn, they would scarcely affect the European market. Dumping, however, is another matter, but Europe believes Russia's internal requirements and her improved position on conclusion of the program may obviate resort to dumping.

European iron and steel producers may well wonder what effect such an increase in steel producing capacity may have on their own economy, from the point of view both of production and sales at home and abroad.

Let us consider present facts, in the form of production and foreign trade figures, and the inferences that can be drawn from them.

At the end of 1928, the effective capacity of steel production in Russia was approximately 4,500,000 tons. The original 5-year plan provided for a gradual annual increase that would bring productive capacity to some 10,500,000 tons by the end of 1933.

Later, however, the Soviet government planning commission further expanded the program, and the revised 5-year plan now provides for a potential output of 21,000,000 tons of steel at the end of the period.

In 1928, the estimated capacity of steel production for the six leading European countries, exclusive of Russia, was 48,000,000 tons. This figure applies to Great Britain and to the five steel entente countries: Germany, France, Belgium, Luxemburg, and the Saar.

Other Countries Expand Little

It can be reasonably assumed that these same countries have by now increased their capacity by about 2,000,000 tons, and that further expansion in the next three years will be only moderate.

We therefore arrive at this, our first conclusion: That while at the end of 1928 the steel capacity of Russia was approximately 9.40 per cent of the combined capacity of the other six leading producing countries of Europe, by the end of 1933 Russia expects to be in a position to produce as much as 40 per cent of the possible combined output of Great Britain and the Entente countries, which together are responsible for 85 per cent of the European output, exclusive of Russia.

Let us now consider actual figures of production:

The accompanying table gives European steel output figures for 1929 and 1930. For Russia the figures are given for the periods October to September, which make up the Russian business year on which the 5-year program is based. It will be seen that in the business year of 1928-29, Russia's output of steel reached 98.5 per cent of

European Steel Production Compared with Russian

(Metric tons)

	1930	1929
Steel Entente countries	28,530,000	34,990,000
Other Continental countries exclusive of Russia	7,355,000	8,510,000
Great Britain	7,415,000	9,810,000
Europe, minus Russia	43,300,000	53,310,000
Russia	Oct. 1929-Sept. 1930	Oct. 1928-Sept. 1929
Output	5,550,000	4,720,000
First program	5,850,000	4,800,000
Revised program	6,330,000	.....

NIGHT was turned into day" . . . as "the shock brigades" of the soviet swept down on Dnieprostroy, and completed a construction task that "faint hearts" said was impossible in the time proposed for it. This is the joyful news the soviet press proclaims to all the Russians. This illustration of the new bridge at Dnieprostroy is from the soviet's monthly magazine, distributed in many countries

the tonnage fixed by the original program. In 1929-30, the Russian output was 95 per cent of the original program tonnage, but only 87.5 per cent of the tonnage provided for in the revised program.

On the other hand, 1929 was a record year for production in Europe, while 1930 was marked by a drop of 10,000,000 tons, or 18.75 per cent, for all European countries, exclusive of Russia. Yet Russia's output in 1929-30 showed an increase of 17.6 per cent over the previous business year's tonnage.

Furthermore, since October, 1930, the output of steel in Europe has been falling off, and was substantially less than in the period October, 1929, to February, 1930. Russia, on the contrary, produced 1,965,000 tons of steel during the four months October, 1930, to January, 1931, as against 1,819,000 tons in the corresponding period, 1929-

(*Concluded on Page* 91)

Tells Pipe Convention Russia Is Dangerous

Cleveland—James W. Gerard, former ambassador to Germany, speaking before the twenty-second annual convention of the National Pipe and Supplies asociation here May 12, declared the development of Russian industry, due to unfair competitive practices, constitutes a threat to the industry of the entire world.

Mr. Gerard is chairman of the committee on industrial inquiry of the National Civic association and honorary chairman of the Conference on Unfair Russian Competition, and came to the convention as guest speaker.

Several hundred delegates from all parts of the country attended the convention, being held May 11, 12 and 13. The first meeting opened May 12 with W. H. Smith, of the W. M. Pattison Supply Co., Cleveland, presiding. J. H. Borton, first vice president of the association, introduced President C. F. Harvey, of A. Harvey's Sons Mfg. Co., Detroit.

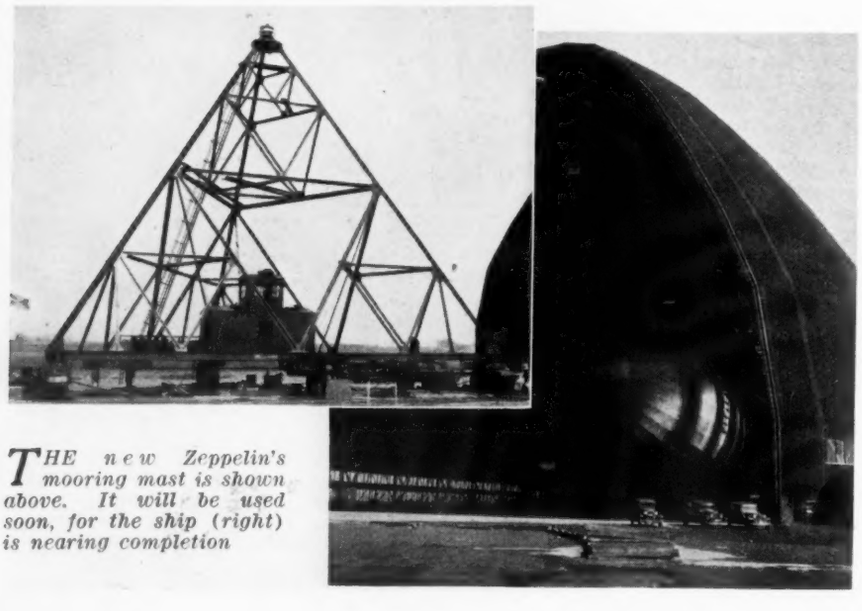
Immediately following Mr. Gerard's address, the executive committee of the association met in the assembly rooms. This committee consisted of J. J. McArdle, of McArdle & Cooney Inc., Philadelphia; A. G. Stoughton, Midwest Piping & Supply Co., St. Louis; P. J. Frey, Central Supply Co., Minneapolis; E. F. Keating, E. F. Keating Co., New York; C. C. Weiland, Central Supply Co., Indianapolis; W. H. Smith, W. M. Pattison Supply Co.; J. A. Vann, Young & Vann Supply Co., Birmingham, Ala., and L. B. Peebles, Crane Supply Co., Los Angeles.

Steel Mooring Mast for Navy Airship Is First Incorporating Self Propulsion

APPROXIMATELY 200 tons of steel was required for the motorized mooring mast being erected for the Goodyear-Zeppelin Corp. at Akron, O., to handle the new United States navy dirigible, AKRON, now nearing completion. With the use of this mast, constructed by the Wellman Engineering Co., Cleveland, it is estimated that six men will be able to negotiate the mooring of the large airship.

Built as a tripod, the mast has its three legs resting on crawler treads, power being transmitted to two of them through a differential. The third treaded wheel serves as the steering member, enabling the operator to guide the unit about the airport. While the general design follows that of a similar machine developed by the navy for handling the LOS ANGELES at the Lakehurst, N. J., base, the new mast is the first self-propelled unit built.

A 225-horsepower engine furnishes power to a generator which supplies current to the driving motor underhung from the base in line with the driveshafts. Another motor is used in connection with the electrically controlled steering mechanism. A winch installed on the base of the mast will be employed to draw the ship's nose into the cup by means of a line dropped by the air crew.



THE new Zeppelin's mooring mast is shown above. It will be used soon, for the ship (right) is nearing completion

Amalgamated Reaffirms Scales; Sheet Wages Up

Present wage scales applying in bar mills and sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers were reaffirmed by the association at its annual convention in Reading, Pa. The contracts expire June 30.

S. C. Leonard, secretary, Western Bar Iron association, notified the association that it is ready to sign the boiling scale for the new year, and this was accepted. The usual midsummer conference between representatives of the two associations, it is believed, will not be necessary. No action has been taken by the employers on the sheet and tin plate mill scales.

The bimonthly examination of sheet prices at Youngstown, O., last week disclosed an average of 2.65c per pound for Nos. 26, 27 and 28 gage black sheets in March and April. Wages will be up 1½ per cent to 15 per cent above base in May and June. A reduction of 3 per cent was made in March and April. Following is a comparison of price averages and wage changes:

March-April	2.65c	+1.5 per cent
Jan.-Feb.	2.60c	—3 per cent
Nov.-Dec.	2.70c	—1.5 per cent
Sept.-Oct.	2.75c	unchanged
July-Aug.	2.75c	—4.5 per cent
May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
May-June	3.65c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged

Soviet Buys Less Here

New York—Purchases of American products by the Amtorg Trading Corp., New York, for shipment to Russia in the six months ended March 31 totaled $33,385,000, compared with $60,441,000 in the six months ended March 31, 1930. This

was a fall of 44.8 per cent, which, it is pointed out by officials of the Amtorg corporation, may be attributed to increased difficulties in financing Russian orders and to further attacks upon Soviet-American trade.

The Business Week In Washington

FIGURES of the bureau of immigration show there was a reduction of more than 50 per cent in March immigration compared with March, 1930.

□ □ □

Secretary Mellon, talking to international bankers assembled here last week, said this is no time to undertake drastic wage cuts which would bring down the standard of living.

□ □ □

Representatives of American automobile manufacturers, conferring with the President, asked him to make representations against continuance of the practice of indirect tariff discriminations against American motor vehicles by foreign countries.

□ □ □

Representative Snell, of New York, chairman of the rules committee of the house, answering delegates to the International Chamber of Commerce here said that the removal of present tariff barriers would injure both this country and the world.

□ □ □

Various branches of the building industry were represented at a conference here last week with the President when they offered the assistance of their various groups in speeding up the Federal government's construction program.

Department of Justice Is Mum on Rail Price Probe

Washington—Investigation still is under way by the department of justice in connection with prices of steel rails, which it was charged by Senator Couzens, of Michigan, are "fixed."

Officials of the department, following their regular procedure in the matter of publicity regarding investigations, refuse to discuss the progress they are making or to say what they are finding.

There has been a feeling in some quarters that the department is merely "going through the motions" of the investigation, but there is no way of confirming this.

The alleged fixing of prices of rails was brought to the attention of the department by the interstate commerce commission as the result of a communication to the commission from Senator Couzens.

Steel Industry Questions Increasing Rail Freight Rates

HEADS of 50 leading railroads, meeting at Chicago, May 8, as the Association of Railway Executives, took what may be the first step in a campaign for increased railroad freight rates.

After diagnosing the condition of the railroads from the viewpoint of providing needed additional revenue, the executives voted to instruct rate groups to make a study of the rate structure with the objective of increasing revenue.

Executives of the railroads point out that in the past decade the tendency in rate-making has been to reduce. Of about 6000 rate revisions, 5000 have entailed reductions. The word "increase" has not officially been utilized in discussing the situation; "alter" is the word, but the objective is increasing revenue.

Want $400,000,000 Annually

Had the rate increase of 1920 been maintained, instead of being vitiated by a decrease in the following year and subsequent revisions, railroad revenue in 1930 would have been $365,000,000 greater. Reductions since 1920 have cost the railroads $2,800,000,000, executives claim. They now desire to revise rates sufficiently to add $400,000,000 annually to their revenue.

Steel executives in the Pittsburgh and Chicago districts, canvassed by STEEL, express sympathy with the railroads, which are among their three best customers, and desire increased revenue in order to stimulate purchases of rolling stock and track material. But the steel industry's first reaction—and necessarily a superficial one—is that higher rates would only tend to divert more traffic to highways and waterways and only work injury to the railroads.

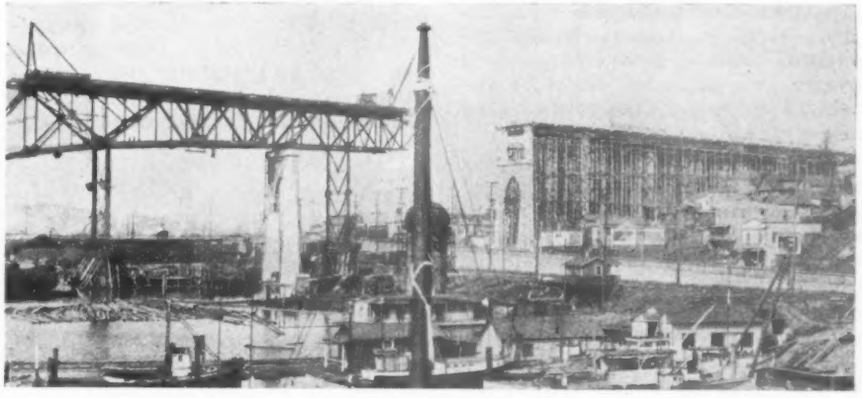
Obviously, before any definite action is taken by the railroads, the situation must be thoroughly studied and a case for the interstate commerce commission prepared. Therefore there is no likelihood of any immediate, sweeping revision of railroad freight rates.

There is a suggestion at Chicago that the primary purpose of the Chicago meeting was to consider a reduction of railroad wages, and that the rate matter was a by-product.

Pittsburgh Sees Further Diversion of Traffic

Pittsburgh—Steel producers in the Pittsburgh district see little possibility of aid to their industry through a general increase in freight rates and corresponding expected inprovement in revenue of the carriers. Some indirect advantage might accrue, it is believed, through larger spending power for new equipment but due to the length of time involved in adjusting rate schedules it is believed that the present depressed situation in business will be remedied before any aid could be forthcoming from the railroads.

It is believed that an increase in rates would only tend to divert traffic to the rivers and trucks, competition which has been intensified over recent years. It will be recalled that the Central Freight association recently proposed to institute lower rates on short hauls of steel products similar to those directed to the in-



BUILDING LARGER BRIDGES ON PACIFIC COAST

This steel and concrete structure over Lake Union at Seattle will be approximately 2000 feet long, and the central span, 800 feet in length, will have a clearance of 141 feet over the navigable waterway. The general contract was awarded the American Bridge Co. About 8000 tons of structural shapes and 900 tons of reinforcing steel are required. The bridge will cost approximately $2,225,000

stitute by the Pennsylvania Public Service commission.

This move, it is believed, was prompted partly by the increased competition afforded by trucks on short haul movement of iron and steel products. So far as Pittsburgh district is concerned, development of river transportation is expected to increase and where possible freight will be diverted from railroads to the rivers.

Steel producers believe that new buying of equipment by the carriers will be prompted largely by the need for such facilities and only to a small extent by the amount of income and surplus purchasing power of the roads. The steel industry itself looks for little additional change in the general structure of freight rates on steel products following recent revisions, although some minor adjustments may be made such as those involved in the proposal of the Central Freight association.

At the same time, it is believed that some compensation is due the carriers to offset the increased taxes that have resulted over the past several years accompanied by a loss in traffic but that the situation should be worked out through a better coordination of transportation facilities.

Chicago Doubts if Rate Move Is Constructive

Chicago—Western steel shippers, loath this early to comment on any possible proposal of the railroads to seek an adjustment of freight rates, are almost unanimous in stating that a horizontal rate increase might not accomplish what the roads are seeking.

With a substantial part of iron and steel traffic susceptible to other means of transportation, the belief is expressed that much traffic might be diverted to trucks, lake boats, and other forms of transportation in the event of a universal increase in rates. It is held that some rate readjustments might well be made, but the question arises as to whether general freight rate advances would be the best means to help the roads regain lost revenues.

Much sympathy is expressed by shippers with the need of railroads' regaining lost business. It is recognized that the welfare of the carriers, which are the backbone of transportation, demand the better earnings, particularly from the steel industry's viewpoint.

Late in 1925 the roads asked for a 5 per cent horizontal freight increase in western territory, which was denied by the interstate commerce commission. The commission pointed out the need of certain readjustments, however, and this case led to I. C. C. No. 17,000, part 2, which resulted in a number of advances in short haul rates in accordance with a mileage scale.

Some views here are that any further attempts in universal rate advances might meet with denial from the commission, although it is pointed out that the action of the carriers is in such a preliminary state that it is difficult to analyze any features of rate revision possibilities.

New York Sees Relief Available Too Late

New York—Sentiment in the steel trade at New York is opposed to any move leading to higher freight rates. Not only is it believed that net profits of the railroads are little if any worse than those of general industry, but also that any general readjustment not already contemplated would have a further depressing effect upon business.

Moreover, should a horizontal or general rate increase be proposed it would take at least a year to 18 months for the rates to become effective, based upon previous experiences where the interstate commerce commission made extensive investigation. By the time rates became effective, business generally might be improved and the plight of the railroads less acute.

Certain steel leaders feel much can be accomplished toward stability in disposing, first, of the case dealing with western trunk line rates, including both class and commodity rates, and second, class rates in classification territory.

Court Lets Bethlehem Pay Bonus, Pending Suit

New York—Breakdown of the Far court at Newark, N. J., issued an order May 12 permitting the Bethlehem Steel Corp. to make bonus payments to its officers pending decision in the suit to test the legality of bonus payments. Surety bonds, however, must be posted to indemnify the corporation should the court later determine the bonus was not warranted.

Far East Takes More Steel

New York—Breakdown of the Far-East conference of steamship lines recently has resulted in a spurt in steel buying for the Far East. Rates, originally $8 per gross ton, first sagged off to $7 and now are holding at around $5. This situation has brought American steel commodities down to an attractive level for oriental buyers. The Philippines are understood to have been recent substantial buyers of galvanized sheets, and it may be due to participation in this business that one eastern mill recently boosted its operations to 100 per cent.

Postpone Hearings on Sheet & Tube Stock Value

Youngstown, O.—Hearings to establish a fair cash value for Youngstown Sheet & Tube Co. stock held by those opposed to the merger with Bethlehem Steel Corp. were postponed from May 11 to June 11 by Judge H. Gessner in common pleas court. Various amounts, all in excess of the $110 a share once offered by Sheet & Tube, were asked by Cyrus S. Eaton and the opposition group. The appeal in the merger injunction suit may not be heard before September, as Sheet & Tube counsel have not definitely planned to request a hearing before fall.

Drops Range Boiler Charge

Washington—Federal trade commission, May 7, dismissed its complaint charging six eastern manufacturers with unfair methods of competition in the sale and distribution of range boilers on the Pacific Coast. The six respondents in the case were Wheeling Steel Corp., Wheeling, W. Va., John Wood Mfg. Co., Conshohocken, Pa., Detroit Range Boiler & Steel Barrel Co., Detroit, W. A. Case & Son Mfg. Co., Buffalo, Casey Hedges, Inc., Chattanooga, Tenn., and the Scaife Mfg. Co., Pittsburgh.

Announces Prize Winners

First prize of $500 for the most artistic bridge design by a student of architecture has been awarded to R. F. Weber of Atelier Adams Nelson, Chicago, by the American Institute of Steel Construction, New York. Second prize, $250, was awarded to G. E. Crippen, Iowa State college, and third, $100, to L. W. Casey, of the same college.

The jury decided to withhold the first prize to the group which contested for the best design by an engineering student. The second prize in this group for $250 was awarded to J. C. Iandolo, University of Pennsylvania, and the third prize of $100 to C. Robertson, University of Michigan.

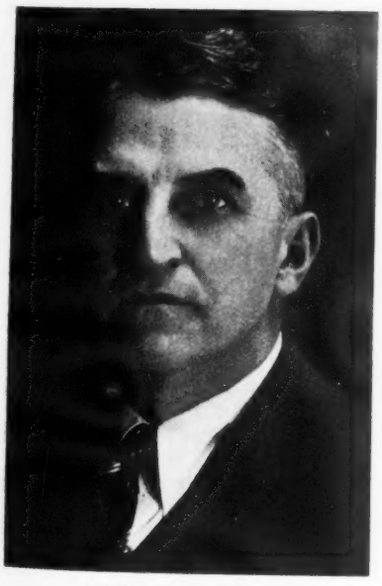
Joins Domhoff-Joyce

Chicago—Walter E. Oldslaker, who for 25 years has been with the sales force of Rogers, Brown & Crocker Bros., and its predecessor company at Cincinnati and Chicago, has joined the Chicago office organization of the Domhoff & Joyce Co., sales agents for by-product foundry coke. He will sell coke in territory west and northwest of Chicago.

To Present Papers Before Iron, Steel Institute

F. N. SPELLER, director, department of metallurgy and research, National Tube Co., Pittsburgh, will speak on Co-operative Research in the Iron and Steel Industry," at the American Iron and Steel institute 39th general meeting at New York, May 22. After college he spent three years in general engineering and then became affiliated with the National company, and since has been identified particularly with developments in the abatement of corrosion in water and oil pipe. He has served on numerous association committees and for three years has been chairman of the metallurgical advisory board of United States bureau of mines and Carnegie Institute of Technology.

F. N. Speller



William M. Henry

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H. GERRISH SMITH, vice president, Bethlehem Shipbuilding Corp. Ltd., New York, will speak on "Shipbuilding and its Relation to the Steel Industry." After serving in United States navy as midshipman and then as naval constructor, he became manager in 1903 of Fore River Ship & Engine Co., later Fore River Shipbuilding Corp., Quincy, Mass., rising by 1913 to vice president and general manager. He became manager of Bethlehem Shipbuilding Corp. Ltd., in 1917 and in 1921 was appointed assistant to the president. He was elected vice president in 1923.

Photo by Blank & Stoller Inc
H. Gerrish Smith

Thomas J. McLoughlin

Victor Windett

Marcus A. Grossmann

□ □ □

MARCUS A. GROSSMANN, vice president, Republic Research Corp., Massillon, O., subsidiary of Republic Steel Corp., Youngstown, O., will speak on "An appraisal of Nitriding." With Pittsburgh Testing Laboratories, Pittsburgh, 1912 to 1915, he spent two years with American Vanadium Co., Bridgeville, Pa. Next with the bureau of standards at Washington for two years, he returned to Vanadium Corp. of America and re-

(*Concluded on Page* 91)

April Ingot Rate Falls 9.04 Per Cent Below March

STEEL ingot production in April declined 9.04 per cent from March, according to figures of the American Iron and Steel institute. The daily rate in April was 104,711 gross tons, compared with 115,138 tons in March. Per cent of operation in April was 49.29, compared with 54.20 in March. The April rate was slightly higher than that of February and markedly higher than in January. A decline in April has been noted in each of the past five years except 1928. In that year the slip was deferred until May.

Total production in April, 1931, as calculated by the Institute, based on companies producing 95.21 per cent of total output in 1930, was 2,722,479 gross tons, compared with 2,993,590 tons in March and 4,104,492 tons in April, 1930.

For four months of 1931 average daily production was 103,661 tons, compared with 157,060 tons for the corresponding period of 1930. The per cent of operation averaged 48.79 for four months of 1931, compared with 78.45 for the same period of 1930.

In its report for April the institute has revised figures for 1930, making changes in the open-hearth production, which affected the monthly output totals, calculated monthly output, daily output and per cent of operation. The percentage of production represented in these figures has been increased from 94.27 per cent to 95.21 per cent of total production of 1930.

Metal Door Sales Traced

Reports to the department of commerce by 148 manufacturers of metal doors, shutters and window sash and frames show that 85 per cent of their output is sold to industrial users, largely building contractors, 12.4 per cent to manufacturers' own wholesale branches and other wholesalers and 2.6 per cent to retailers. Total sales in 1929 were $69,242,000.

Foundry Output Tapers

Production of castings by ten foundries comprising the Worcester, Mass., foundry council declined in March after a high for 1931 set in February. Reed-Prentice Co. has withdrawn from the council. Monthly comparisons follow:

1930	In Pounds
January	2,862,705
February	2,786,850
March	3,160,872
(Three months)	8,810,427
April	3,337,292
May	3,261,695
June	2,675,042
July	2,068,084
August	1,879,655
September	2,117,590
October	2,299,494
November	1,738,667
December	1,780,279
(Year)	29,966,225
1931	
January	1,843,791
February	2,047,888
March	1,856,090
(Three months)	5,747,769

Unfilled Tonnage Drop Explains Easing Operations

Declining operations through April for the country's steelworks as a whole was reflected in the United States Steel Corp. relation of its operating rate and incoming orders. Unfilled tonnage dropped 2.24 per cent as of the last of April and stood at 3,897,729 tons for that date. Comparisons follow:

1930			
Jan. 31	4,468,710	51,517+	1.20+
Feb. 28	4,479,748	11,038+	0.25+
Mar. 31	4,570,653	90,905+	2.03+
April 30	4,354,220	216,433—	4.73—
May 31	4,059,227	294,993—	6.78—
June 30	3,968,064	91,163—	2.24—
July 31	4,022,055	53,991+	1.36+
Aug. 31	3,580,204	441,851—	10.9 —
Sept. 30	3,424,338	155,866—	4.35—
Oct. 31	3,481,763	57,425+	1.68+
Nov. 30	3,639,636	157,873+	4.53+
Dec. 31	3,943,596	303,960+	8.35+
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—

Galvanizing Took Less Zinc in 1930; Coatings Thinner

New York—Less zinc was used by the galvanizing industry last year than since 1922, according to the annual report of the American Bureau of Metal Statistics. Total used in hot galvanizing was 212,100 short tons, compared with 285,500 in 1929 and 205,400 in 1922. The largest recent year was 1926—288,200 tons.

Including 4500 tons used in electrogalvanizing, last year's total consumption of zinc in this industry was 217,000 tons, compared with 290,000 in 1929.

All five major departments of galvanizing showed a decrease last year, due not alone to lighter business but also to lighter coatings of zinc. In galvanizing sheets, the coating in 1930 was 7.46 per cent of the weight of the finished product, compared with

Steel Ingot Production—1930-31

95.21 Per Cent of Industry Reporting
Gross Tons

1930	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	3,157,761	441,572	3,599,333	3,778,235	27	139,935	69.89
Feb.	3,335,428	508,618	3,844,046	4,035,111	24	168,130	83.98
Mar.	3,513,269	539,616	4,052,885	4,254,331	26	163,628	81.73
Apr.	3,405,671	509,234	3,914,905	4,109,492	26	158,057	78.95
4 mos.	13,412,129	1,999,040	15,411,169	16,177,169	103	157,060	78.45
May	3,265,353	528,968	3,794,321	3,982,915	27	147,515	73.68
June	2,849,079	407,586	3,256,665	3,418,535	25	136,741	68.30
July	2,430,128	353,723	2,783,851	2,922,220	26	112,393	56.14
Aug.	2,541,367	374,467	2,915,834	3,060,763	26	117,722	58.80
Sept.	2,275,910	429,975	2,705,885	2,840,379	26	109,245	54.56
Oct.	2,165,341	399,704	2,565,045	2,692,539	27	99,724	49.81
Nov.	1,807,133	300,337	2,107,470	2,212,220	25	88,489	44.20
Dec.	1,659,026	226,788	1,885,814	1,979,547	26	76,136	38.03
Total	32,405,466	5,020,588	37,426,054	39,286,287	311	126,322	63.09
1931							
Jan.	2,044,298	296,620	2,340,918	2,458,689	27	91,063	42.86
Feb.	2,085,529	296,974	2,382,503	2,502,366	24	104,265	49.08
Mar.	2,504,060	346,137	2,850,197	2,993,590	26	115,138	54.20
Apr.	2,275,404	316,668	2,592,072	2,722,479	26	104,711	49.29
4 mos.	8,909,291	1,256,399	10,165,690	10,677,124	103	103,661	48.79

Figures exclude crucible and electric ingots. Operating percentages for 1930 are based on capacity of 62,265,670 gross tons as of Dec. 31, 1929; for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930.

7.81 in 1929 and 8.67 in 1925. A similar tendency cut the coating of tubes from 7.79 per cent in 1926 to 6.40 per cent in 1930.

Wire was an exception last year with the heaviest coating in a number of years, at 3.36 per cent of the finished product. Wire, however, does not take nearly so much zinc as sheets and pipe.

As zinc was cheaper in 1930 than in a number of years, the tendency to cut the coating seems to bear little relation to cost.

Steel Castings Orders Reverse February Showing

March bookings of steel castings by principal manufacturers improved over February. Production for March at 37.6 per cent capacity was the highest since October, 1930. Monthly reports are based on reports to the department of commerce:

	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
1930				
March	122,462	84.9	113,465	78.6
3 mos.	338,381	78.2	330,100	76.3
April	92,987	64.4	110,692	76.7
May	91,077	63.1	104,984	72.8
June	61,164	42.4	90,795	62.9
July	57,850	40.1	78,977	54.7
Aug.	50,370	34.9	64,303	44.6
Sept.	49,542	34.3	61,919	42.9
Oct.	45,552	31.6	59,522	41.2
Nov.	48,123	33.3	44,290	30.7
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.*	46,810	32.1	46,294	31.8
Feb.*	40,292	27.7	49,520	34.0
March**	46,638	32.0	54,714	37.6
3 mos.	133,740	30.6	150,528	34.5

*Revised. **Preliminary.

Production of Malleable Castings High Since June

Malleable castings' output in March at 35,039 tons or 35.8 per cent of capacity, touched the highest level since June, 1930. Shipments were improved in the same ratio. Following data are reports of 129 plants to the department of commerce:

	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
1930				
March	63,464	65,164	60,915	64.6
3 mos.	190,787	182,955	180,530	64.5
April	61,984	60,875	54,625	63.1
May	53,502	55,656	47,022	53.8
June	39,347	43,937	33,865	40.3
July	30,911	32,656	30,068	31.0
Aug.	25,614	31,845	25,409	26.2
Sept.	26,528	29,223	26,251	27.2
Oct.	28,785	29,206	24,171	29.0
Nov.	27,114	25,974	27,451	27.8
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.*	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
Mar.**	35,039	36,467	33,855	35.8
3 mos.	99,893	100,666	99,097	33.9

*Revised. **Preliminary.

Adopt New Sheet Schedules; Name Hot-Rolled Prices

GENERAL adoption of the new sheet classifications announced April 23 by the American Rolling Mill Co., Middletown, O., now appears to be only a matter of time. Some important sheetmakers have adopted the plan and have issued quotations, for both cold-rolled and hot-rolled sheets. Others have formally announced their adoption of the new classifications, but have not named prices. Many sheetmakers indicate their intention to switch to the new plan at an opportune time, while still others are studying it.

Considerable support for the plan was gained this week when the American Sheet & Tin Plate Co., subsidiary of the United States Steel Corp., formally decided to adopt it. Newton Steel Co., Youngstown, O., Allegheny Steel Co., Brackenridge, Pa., Weirton Steel Co., Weirton, W. Va., and Otis Steel Co., are among those to announce similar action. Practically all sheet producers in the Mahoning valley are reported committed to it, though not all have made announcements.

Galvanized Sheets Also Included

While the trade was examining the new classifications and prices of cold-rolled sheets, the American Rolling Mill Co. this week took the next step by announcing prices of the hot-rolled grades. No. 10 gage hot-rolled sheets are quoted at 1.70c, Pittsburgh, and No. 24 gage hot-rolled annealed sheets are quoted at 2.40c. Differentials of 10 and 15 cents, respectively, apply at Gary, Ind., and Chicago, delivered.

Galvanized sheets, also brought under the new classification schedule, are quoted at 2.90c for the No. 24 base gage. Long ternes, No. 24, unassorted, are 3.15c. The previously announced quotations of 2.35c for No. 10 cold-rolled; 2.95c for No. 20 cold-rolled; 3.10c for No. 20 autobody, and 3.35c for No. 20 furniture sheets complete the price schedule under the reorganized marketing program as announced by the Middletown producer.

Another sheet producer with headquarters in Youngstown has announced a price of 2.50c, Pittsburgh, for No. 24 gage hot-rolled annealed sheets. Thus a spread of 2.40c to 2.50c has already developed in this grade. Some irregularities attending the change to the new classifications also are noted at Pittsburgh.

The fact that many sheet mills have contracts on the former bases running to the end of the second quarter has tended to retard actual application of the new plan. With few exceptions, however, those who have definitely committed themselves to it are endeavoring to apply it to all new business.

Following is a correct list of differentials for cold-rolled sheets, as announced by the American Rolling Mill Co., some typographical errors having been made in the table as originally published:

Standard range of sizes, 24 inches and wider
17 gage and lighter
20 gage, base

Gage No.		Differential per 100 lbs.
17	Deduct	$.15
18	Deduct	.10
19	Deduct	.05
20	Base	Base
21	Add	.05
22	Add	.10
23	Add	.15
24	Add	.20
25	Add	.25
26	Add	.30
27	Add	.35
28	Add	.45

Wide-Flanged Structural Sections Are Standardized

In the interest of simplification and standardization of wide-flange structural steel sections, the manufacturers —Bethlehem Steel Corp., Carnegie Steel Co., and Illinois Steel Co.—have revised their respective groups, aiming to make them as nearly interchangeable as mill conditions and economical operations will permit. Generally these modifications are along the lines of reduction in number and weight of sections and the elimination of overlapping groups.

Upholds Eastern Steel Sale

Philadelphia—Federal district court at Philadelphia has approved the recent sale of the Eastern Steel Co. properties at Pottsville, Pa., to the Bethlehem Steel Corp., Bethlehem, Pa. The Pottsville chamber of commerce has filed a protest with the department of justice at Washington charging that the sale is in restraint of trade.

Wage Payments Increase

Youngstown, O.—Wage disbursements in Youngstown in April amounted to $5,519,909, nearly $400,000 more than in March. The disbursements in April, 1930 totaled $6,450,797.

Industrial Men in the Day's News

Samuel M. Vauclain, Chairman, the Midvale Co., Philadelphia

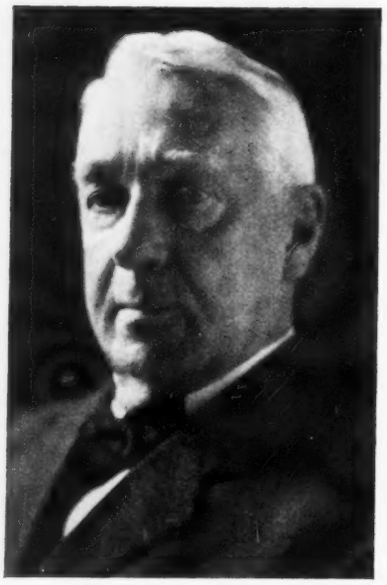

Photo by Blank & Stoller Inc.

INSTEAD of divorcing himself from responsibilities at three score and fifteen years, he takes on added duties.

A PRODUCT of the machine shops of Pennsylvania railroad, he early turned to locomotive building and rose from general foreman to the chairmanship.

DURING the World war he supervised the building of 14-inch naval guns mounted on trucks, for which service he was decorated by France.

OBLIVIOUS to biblical and man-made restrictions of three score and ten years as the limit to a man's activities, Samuel Matthews Vauclain at 75 assumes added responsibilities. For several years chairman of the Baldwin Locomotive Works, with whose upbuilding he has been so long identified, Mr. Vauclain now becomes chairman of the Midvale Co., Philadelphia, which operates seven open hearths at Nicetown, Pa., with a steel ingot annual capacity of 200,000 tons. He also is chairman of Whitcomb Locomotive Co., Rochelle, Ill., just acquired by Baldwin as noted in STEEL of April 30, 1931.

Two months after he was born at Port Richmond, N. Y., in 1856, Mr. Vauclain was taken to Altoona, Pa., where he acquired a grade school education. He started to learn the machinist trade at 16 in the shops of the Pennsylvania railroad. He remained in various capacities until 1882, when he was delegated to look after the road's locomotive contracts in Paterson, N. J., and Philadelphia, both in a business and an engineering capacity.

He resigned July 1, 1883, to begin his identification with what was to be Baldwin Locomotive Works. He became general foreman of the Seventeenth street shops, Philadelphia, formerly known as Norris Locomotive Works. In November, 1885, he was made superintendent of plant equipment and in February, 1886, was appointed general superintendent of the entire works including locomotive building and equipment.

On Dec. 31, 1895, he became a partner in the firm of Burnham, Williams & Co., owners of the Baldwin works, and when in 1909 the firm was incorporated he remained as general superintendent. Shortly thereafter the works were sold to Baldwin Locomotive Works, of which A. B. Johnson was president and Mr. Vauclain vice president and general manager. In 1917 he was made senior vice president and at the same time senior vice president of Standard Steel Works, Burnham, Pa., a subsidiary. In 1919 Mr. Johnson resigned and Mr. Vauclain succeeded to the presidency. He later was elected board chairman. In 1922 he was re-elected to a 3-year term as director of Cambria Steel Co., and at present he is on several other boards.

Mr. Baldwin has always been a believer in long hours and hard work. He has for long been the guiding genius controlling the policies of the Baldwin company in its relations with employes. He too is responsible for much of the progress made in modern locomotive design. He invented the original compound locomotive built for the Baltimore & Ohio railroad in 1889. During the World war he had charge of building at the Eddystone, Pa., plant 14-inch naval guns mounted on trucks and in this connection the French government in 1919 made him chevalier of the Legion of Honor.

ALBERT M. HARPER has been appointed assistant general manager of sales of Carnegie Steel Co., Pittsburgh. He succeeds William P. Siebert, who on May 1 retired in harmony with the United States Steel Corp.'s retirement plan, having been with that organization since its formation. Mr. Siebert previously had been general manager of sales of National Steel Co., which became a part of Carnegie Steel Co. Mr. Harper, who formerly was manager of sales in the Pittsburgh district for the Carnegie company, has been succeeded by Dennis Crowley, recently the company's manager of sales at New Orleans.

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R. H. Bacon, formerly advertising manager of Fairbanks' Morse & Co., Chicago, has been appointed manager of the pump sales division. He has been with the company since 1925, when he was placed in charge of publicity for the diesel engine division. He next was given jurisdiction over general publicity and since 1929 has been manager of the advertising and publicity department.

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Neil E. Salsich, formerly identified with Bethlehem Steel Co., Bethlehem, Pa., was elected vice president and general sales manager of Jeffrey Mfg. Co., Columbus, O. He had been with

Obituaries

the Bethlehem company and Pennsylvania Steel Co., Steelton, Pa., which it absorbed, for 28 years, latterly as manager of railroad and mining sales.

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James E. Jones, who retired April 30 as superintendent of the roll department, South Chicago works, Illinois Steel Co., Chicago, in harmony with the United States Steel Corp.'s retirement plan, has become associated with Continental Roll & Steel Foundry Co., Chicago. His contributions to roll and rolling mill design have been numerous, varied and important and he takes with him an experience gained in a period of 62 years, which covers the entire development of American iron and steel rolling. He started with Burden Iron Works Co., Troy, N. Y., in

James E. Jones

1869. After six years there he spent five years with Carnegie-Kloman Co., Pittsburgh, six years with Pencoyd Iron Works, Philadelphia, seven years with Colorado Fuel & Iron Co., Pueblo, Colo., a similar period with Passaic Rolling Mill Co., Paterson, N. J., two years with Dominion Iron & Steel Co., Sydney, N. S., two years with Seaman-Sleeth Co. (Phoenix Roll Works), Pittsburgh, and for a few months in 1904 he was with Ferreria de Tula at Jalisco, Mexico. On Feb. 22, 1905, he became superintendent at South Chicago for Illinois Steel Co., where he remained until his recent retirement.

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James Horton, engineer of construction of river equipment for Carnegie Steel Co., Pittsburgh, has retired, having completed 50 years of service with that company. He formerly was master mechanic of the Homestead steel works and later designed and engineered the construc-

(*Concluded on Page* 95)

JAMES N. HEALD, 66, president and general manager of Heald Machine Co., Worcester, Mass., died May 6. Born in Barre, Mass., he was graduated from Polytechnic institute in 1884 and entered the family business established in 1826 at Barre by Stephen Heald. Later known as S. Heald & Son, it became L. S. Heald & Son upon the death of Stephen Heald in 1888 when James took over the management. In 1903 he purchased his father's interest and moved the business to Worcester, organizing the Heald Machine Co. At present his two sons are vice president-works manager and secretary-treasurer, respectively, representing the fourth generation in ownership of the business.

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Lewis E. Lockwood, 55, president of National Transit, Pump & Machine Co., Oil City, Pa., died May 8.

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George H. Leidiger, 46, treasurer, Northwestern Malleable Iron Co., Milwaukee, died May 5.

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Frank G. Wallace, 78, former president and general manager of Kingston Locomotive Co., Kingston, Ont., died in Pittsburgh, May 10.

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Herbert D. Hall, assistant to the general manager of Wyman-Gordon Co., Worcester, Mass., died May 3. He was born in Grafton, N. H., in 1874.

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Louis J. Mueller Jr., 64, president of L. J. Mueller Furnace Co., Milwaukee, and of its subsidiary, the Manufacturers Foundry Co., died May 4.

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Alexander Gilliand, vice president, Standard Steel Specialty Co., Beaver Falls, Pa., died May 3 at Bellevue, Pa. He also was president of the Duff Patents Co. Inc., Pittsburgh.

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Theodore E. Miller, 81, one of the founders in 1870 of Mertes-Miller Boiler Works, Milwaukee, died May 5. He was born in Germany but lived in Milwaukee about 80 years. He retired 15 years ago.

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Samuel F. Kallenbaugh, 62, since 1928 sales manager of Morgan Engineering Co., Alliance, O., died May 8. He had been with the Morgan company more than 32 years, and for a few years prior to 1928 served as assistant sales manager.

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Robert McCrae Wilson, 59, consulting electrical engineer and associated for 27 years with the General Electric Co., Schenectady, N. Y., died May 6. He was graduated from Cornell university in 1896. He began his engineering career as a draftsman with Sprague Electric Co., which later was purchased by General Electric Co. For many years he had charge of motor construction at the latter's Watsessing, N. J., plant.

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Harry D. Cushman, 57, founder and president of Ferro Enamel Co., Cleveland, died May 6. A graduate of Albion college, Mr. Cushman originally became interested at Cleveland in the production of ferrous metal products

James N. Heald

but early turned his attention to enameling of such products. He largely was responsible for the process of applying enamel to iron castings. He was born at Three Rivers, Mich., and located in Cleveland in 1897.

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John Thompson Adams, 73, in the railway contracting business in Columbus, O., for the past 35 years, died May 11. He was president of the old Concrete Material Co., now known as American Aggregate Corp.

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Sam Heppenstall, 88, chairman and organizer of Heppenstall Co., Pittsburgh, died May 11 at his home in Bala, Pa., where he lived since 1914. He located in Pittsburgh in 1877 having previously been employed by Henry Disston & Sons, Philadelphia. He worked for Howe-Brown Co., Pittsburgh, and later purchased a part of Trethewey Mfg. Co. which he reorganized as Heppenstall Co. He was president from 1898 until 1920, when he retired to become chairman.

Here and There in Industry

PACIFIC CAR & FOUNDRY CO. has acquired the drop forge business and equipment of the Bacon & Matheson Forge Co., 17 West Lander street, Seattle, whose plant was recently damaged by fire. The drop forge machinery will be installed in the former company's shops at Renton, near Seattle, making it independent of other plants for drop forgings. The merged company was organized in 1918 by Cecil H. Bacon and Scott Matheson, who bought out the Westerman Iron Works, established in 1886 by Robert Westerman. Mr. Bacon will now retire and Mr. Matheson will be associated with the Pacific Car & Foundry Co.

□ □ □

Pilling & Co., Philadelphia, pig iron and coke merchants, have closed their New York offices at 11 Broadway.

□ □ □

Golden State Culvert Mfg. Co. has commenced manufacturing steel pipe culverts at 2535 East Fourteenth street, Los Angeles.

□ □ □

Chicago Bridge & Iron Works, Chicago, has moved its office at Dallas, Tex., from the Magnolia building to room 809 Burt building.

□ □ □

Union Foundry Works, Chicago, has moved its offices from the downtown location to the plant at 7610 Greenwood avenue.

□ □ □

Pressed Steel Car Co., of Pittsburgh, has moved its New York offices from Broad and Beaver streets to the Maritime Exchange building, 80 Broad street.

□ □ □

Verios Contracting Co., Pittsburgh, roofer and painter, has moved its office from 1026 Ivanhoe street to 1108 Vickroy street. Christ Verios is general manager.

□ □ □

Hill Clutch Machine & Foundry Co., Cleveland, has moved its New York office from 30 Church street to room 606 at 90 West street. Arthur L. Whiteside remains in charge.

□ □ □

J. S. Thorn Co., Philadelphia, manufacturer of steel windows, industrial and casement types, has appointed A. H. Tosteson, 840 North Third street, Milwaukee, its representative in Wisconsin.

□ □ □

George Hush Jr., 1404 East Ninth street, Cleveland, machinery and industrial equipment, has taken additional space and will maintain a permanent exhibit of the lines he represents. Recent additions to his line include Excelsior Plimtruck Co., Wright-Hibbard Industrial Electric Truck Co. Inc., George B. Carpenter Co., Hough Shade Corp. and Genrich Oven Co. Inc.

□ □ □

Wean Engineering Co., Warren, O., has acquired exclusive license on a patented carloader invented by William W. Leach, Mansfield, O. It is adapted to loading sheet steel, coiled wire and rods in box cars, reaching all four corners.

□ □ □

National Acme Co., Cleveland, has appointed Peterson Bros. Corp., 104 Walker street, New York, its exclusive representative in eastern territory for its standard line of cap and set screws, nuts and studs and other products.

□ □ □

Aluminum Industries Inc., Cincinnati, has opened a branch in Chicago under the name of the Warehousing Service Co., 1923 South Wabash avenue. It will serve the Middle West in automotive manufacture and replacement.

□ □ □

Page Hersey Tubes Ltd., Toronto, Ont., has practically completed its plant for production of seamless tubes. An order for a natural gas line from Haldimand county to Hamilton has been booked, providing work for several months.

□ □ □

Springer Lock Mfg. Co. Ltd., Belleville, Ont., has been purchased by a new company, the American Hardware Corp. of Canada Ltd., headed by George T. Kimball, president of the American Hardware Corp. C. B. Parsons is vice president and C. H. Baldwin secretary and treasurer.

□ □ □

Smoot Engineering Corp., 136 Liberty street, New York, has completed installation of full automatic combustion control on an open-hearth furnace at the plant of the Youngstown Sheet & Tube Co., Indiana Harbor, Ind., and on one at the plant of the Inland Steel Co., Indiana Harbor, Ind. The company also recently completed two full automatic installations and six partial automatic installations at the plant of the Illinois Steel Co., at Gary, Ind. It will soon complete a full automatic installation at the plant of the American Rolling Mill Co., Middletown, O.

□ □ □

Ramet Corp. of America has been formed as a subsidiary of the Fansteel Products Co. Inc., North Chicago, Ill., to take over the United States and Canadian rights in Ramet hard cutting metal, developed by the latter. J. M. Troxel is president, C. E. Stryker vice president and general manager, and E. F. Radke secretary and treasurer. The new corporation has taken over patents and contracts and has an exclusive agreement with the parent company for raw materials and continuance of research.

□ □ □

McCabe & Sheeran Machinery Corp., 50 Church street, New York, has taken over for immediate liquidation the plant of the Brown Mfg. Co., Zanesville, O., manufacturer of agricultural implements. This company now is liquidating the former lathe manufacturing plant of the Houston Stanwood & Gamble Co. at Covington, Ky.

□ □ □

Harding Foundry & Furnace Supply Co., 537 Collins avenue, Columbus, O., has been incorporated to succeed the North Side Foundry Co., which has been operated by Joseph G. Harding. Furnace castings will be added to its production line. Mr. Harding will be president, Mrs. Rita Buxton vice president and Earle O. Buxton secretary and treasurer.

□ □ □

Copper Clad Malleable Range Co., St. Louis, has acquired the foundry building of the Crescent Foundry Co., bankrupt, and will start operations there during the next two or three weeks. The company has considerably outgrown its former quarters on Franklin avenue. Lloyd Scruggs is president and A. H. Stein, secretary and general manager.

□ □ □

McKiernan-Terry Corp., 15 Park Row, New York, has bought the manufacturing business of the Lambert Hoisting Engine Co., Newark, N. J., including all Lambert designs, patents, machinery, patterns, fixtures, inventory and essentials for continued production of the Lambert line. The company will be known as the Lambert Hoisting Engine division of the parent company, and will be under supervision of John A. Lambert. The sales offices will be transferred to 15 Park Row, New York, in connection with the general offices of the McKiernan-Terry Corp.

Will Expand on Coast

Bethlehem Steel Corp., Bethlehem, Pa., is expected to spend $2,000,000 on improvements for the Pacific Coast Steel Co., a subsidiary, at Vernon, Calif. Recently 17 acres adjacent to the Vernon plant were purchased.

MIRRORS of MOTORDOM

DETROIT

GRAHAM having formally introduced its new low-priced Prosperity six, as forecast, speculation concerning automobile changes now largely converges upon Packard and Reo, not to forget Ford.

Whether Packard is undertaking the usual conservative revision of its models or will make really radical departures still is a matter of opinion, with the former the more widely held view.

Certainly, the syncro-mesh transmission will be standard on all forthcoming Packards. Thus far the price reduction sale frequently preceding a change in Packard models has not been announced.

Reo is bending its energies toward the introduction, about June 1, of new four and six-cylinder trucks, and it is understood that a Continental six-cylinder motor will be used to power a new Reo low-priced passenger car.

Chrysler has an announcement to make concerning its eight. Hudson may be a convert shortly to free wheeling. Peerless has done the engineering work preliminary to casting its fortunes with the quality field, but will probably withhold its fire until the retail market is more favorable.

May Output Equalling April

Passenger car production thus far in May has been exceptionally steady. On the basis of the first ten days a total output of about 330,000 units is indicated. Preliminary estimates of April output at 350,000 units may prove high. It can be said definitely that from about April 20 to May 10 the daily rate has not varied.

In this period there have been many fluctuations, of course. Chevrolet has risen, slowly but surely, until now it is assembling about 5000 units daily, 5 days a week. Ford on the other hand has maintained a daily rate of 7100 to 7200 units, but has curtailed from a 4 to a 3-day week in the "key" departments. On a weekly basis, thus, Chevrolet is outrunning Ford 25,000 to 21,500.

By the end of May, it is believed in Detroit, the gap between these keen competitors will have widened. When the month opened Chevrolet executives were shooting at a mark just below 125,000 units; output thus far indicates at least a 110,000-unit month, with the possibility of gains in the next fortnight.

Fisher Guaranteeing Work

At the Fisher Body plant in Cleveland, which produces practically all the closed Chevrolet bodies, current production is 5000 bodies daily. Skilled workmen who have found employment in other industries are being recalled and are being guaranteed steady employment for at least six months.

Ford's domestic production in May is headed for about 90,000 units. There have been no increases in specifications to material suppliers or parts makers to indicate any improvement, and there are some signs that inventories are being reduced. Denials by Ford officials have not upset the deduction that important developments are being matured.

Among the other manufacturers slight recessions have been made by Auburn-Cord, Durant, Hupp, Packard and Plymouth, while Studebaker, Graham and DeVaux-Hall have turned up slightly, in the case of the latter two by reason of production of new models. Other assembly rates are generally unchanged from last week.

On a weekly basis, passenger car and truck production is holding steadily at 75,000 to 77,000 units. A year ago the weekly rate was approximately 100,000 units; in the lush spring of 1929 it was over 140,000 units.

April and May, 1929, were the top-notch months of all time for the automobile industry, their combined output exceeding 1,220,000 units. By way of contrast, the same two months of 1931 will turn in a total of about 660,000 units, or slightly more than half.

Truck production displays considerably greater virility than passenger car production at this time. One estimate is that truck manufacturers are fully 65 per cent engaged, and will probably increase their schedules through June; for passenger cars it is believed the spring peak is passing.

The president of a large parts interest—Thompson Products Inc.—believes the truck industry "will sweep into new high ground" through recognition by the railroads that they must utilize trucks to compete with truckers.

The railroads, this authority maintains, must go into the truck business themselves to make possible store-door delivery and to supplement their passenger service.

The export field for trucks also offers greater opportunities than that for passenger cars. March statistics—the latest available—show an increase in domestic production of cars and trucks of 25.7 per cent, while exports of both increased 31.2 per cent. Exports of trucks under 1-ton capacity jumped 130 per cent.

Ford Has Heavy Truck

Certainly among manufacturers of trucks there is much jockeying. Reo's new four and six-cylinder line of trucks is the answer to the inroads Ford, Chevrolet and other light-truck manufacturers have been making in the heavy field.

Ford has been experimenting, largely on intra-plant hauling, with 2-ton trucks powered by a slightly-modified Fordson tractor motor. Of this type it is understood about 200 are in use.

White has just added two six-cylinder trucks, rated at 9000 and 10,000 pounds.

(Mirrors of Motordom will again appear next week.)

EDITORIAL

Waste in Home Construction Retards Use of Steel

EVERY steelmaker is interested in the use of steel for houses. Numerous surveys which have been made indicate that the potential demand for light shapes and other steel parts in the field of residential construction is large. Several rolling mills, structural steel fabricators and builders have given special attention to the problem of promoting the use of steel for homes. As a result of the work of these pioneers, several thousand steel-frame houses have been built in the United States.

The experience gained in this pioneering effort is extremely valuable. It shows conclusively that the potential market for steel represented in the American home must be cultivated by different methods than those which have proved successful in other fields of steel consumption. Those who have dealt with home construction during the past few years are becoming more and more convinced that the problem of developing this market for steel involves many factors which were not anticipated. In fact, it is probable that the entire process of home building will have to be changed radically before a substantial demand for steel can be created.

Modern Construction Methods Are Not Utilized in House Building

Grounds for this belief are found in comparisons of the methods of house construction with those of other production activities. Automobiles, refrigerators, freight and passenger cars, industrial buildings, yachts, etc., are assembled products. The parts are made to strict specifications and the actual construction involves fairly simple assembly operations. Through this method of manufacture, numerous economies have been introduced so that the purchaser obtains much more for his expenditure than he could possibly receive if the product were made singly to his order. In many cases the article manufactured by mass production methods can be bought for one-fifth of what it would cost if produced by the tailor-made process.

But while modern methods have been applied to the manufacture of numerous articles of every day use, the process of building a home has not changed. As pointed out recently by Henry H. Saylor, editor of *Architecture*, "we still pile brick on brick as did the Egyptians, we still nail shingle on stud frame as did the builders of Paul Revere's house. We still keep house building a special tailoring job with the result that we steadily get less house for our money."

Residential building has not even kept pace with commercial building. The construction of an ordinary home abounds with wasteful practices which would not be tolerated in the erection of a modern office structure. Materials for a skyscraper arrive on the site prepared for easy assembly, while the materials for the majority of houses are delivered almost in the semifinished state—requiring costly alteration and fitting before assembly.

Reduce Cost and Simplify Financing To Popularize Home Ownership!

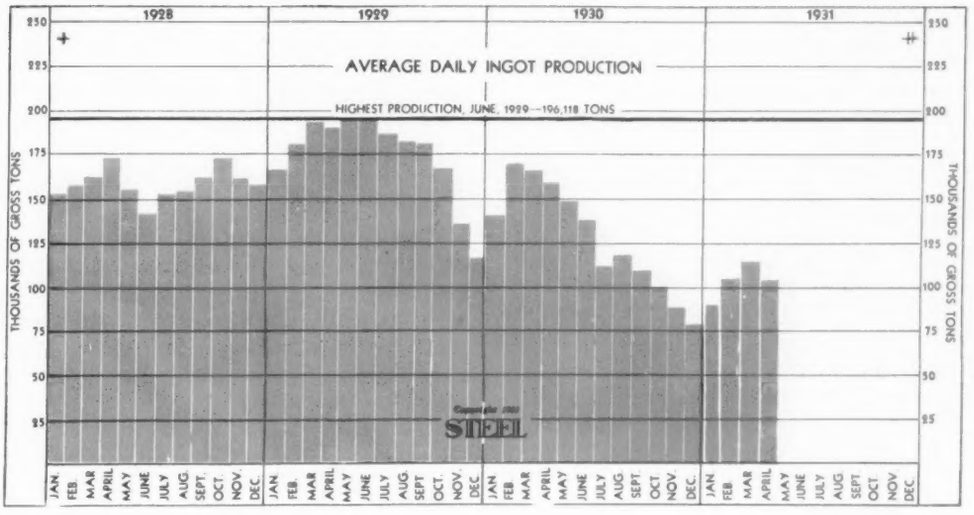
The time is coming when the methods which have proved so beneficial in other activities will be adopted for house construction. When that time comes, a home will cost only a fraction of what it costs today. If, in addition to this easily accomplished reduction in price, similar improvements can be made in the methods of financing—then the incentive to own one's home will be greatly increased.

Steelmakers, steel constructors and others interested in the attractive market represented by the American home will do well to watch this trend of development. The situation calls for materials of construction which can be erected and assembled without the necessity of present-day "cut and fit" methods. It demands improved practices which will permit more shop work and necessitate less field work. It requires a system involving a higher degree of standardization of parts, yet affording ample flexibility in the design of houses so that the individual tastes of owners can be satisfied.

Steel lends itself readily to all of these requirements, but the steel industry must convince architects, contractors and owners of this fact before the market can be won. Steel must be made easily available in the required sizes and shapes. It must be capable of easy erection and assembly. It must be prepared so that other materials can be attached to it without resorting to costly drilling or punching in the field. In brief, if steel is to attain its deserved place in home construction, it must be a convenient material to use.

The problem is complicated, but not more so than many others which the industry has attacked successfully. Solving it not only will stimulate home ownership, but will simultaneously extend an important outlet for steel.

THE BUSINESS TREND



1930

April 159,764
March .. 165,381
Feb. 169,930
Jan. 140,596

1929

Dec. 116,123

1931

April 104,711
March .. 115,138
Feb. 105,305
Jan. 91,971

1930

Dec. 77,222

April Statistics Show Spring Peak Was in March

STATISTICS for April indicate quite clearly that the moderate business recovery which began early in the year reached its peak in March. In a few cases, such as pig iron production and freight traffic, the momentum of the first quarter was continued long enough to result in slight gains in April, but the majority of important barometers of industrial activity were lower in the fourth month.

As expected, output of steel ingots in April declined. The daily rate was 104,711 tons against 115,138 in March and the industry operated at an average of 49.29 per cent of capacity in April compared with 54.74 per cent in the preceding month. This decline, as reported by the American Iron and Steel institute, is slightly more than had been indicated by the weekly estimates of steelmaking operations.

Henceforth 1931 Figures Will Be Compared With Declining Values of 1930

While the rate of pig iron production gained in April for the fourth consecutive month, the record of furnaces in blast points to a probable recession in output in May. Throughout the first quarter the number of stacks in blast on the last day of each month showed encouraging increases, but at the end of April the total of active units was only 114 as compared with 116 on March 31.

Thus far in 1931 production figures show up badly in comparison with those of 1930. In April last year, steelworks were operating at 79.80 per cent of capacity; in April, 1931, the corresponding figure was 49.29. In April last year pig iron output was at the rate of 75.4 per cent of capacity; in April this year the percentage was 46.5. In 1930 the decline in steel ingot and pig iron output was rapid throughout the second and fourth quarters. A temporary interruption occurred in the third quarter. Therefore, from now on production statistics for 1931 will be in comparison with sharply declining figures for 1930.

Resistance of Freight Volume To Downward Tendencies Is Encouraging

Car loadings in the week ending April 25 were down slightly from the previous week, but April already is assured of a total that will eclipse any month since last November. While freight volume is about 16 per cent below the corresponding figures in 1930, the resistance of car loadings to the downward trend manifested by other industrial barometers is encouraging. The slightly improved traffic in April is significant in view of railroad earnings. In March the income of Class I roads totaled $45,905,754, a jump of 70 per cent from the discouraging $27,264,467 income of February. April business should yield an income greater than that of March.

The outlook for the remainder of the second quarter is uncertain. Last week automobile production was slightly higher than in the preceding week and there are grounds for the hope that motor car business will be able to hold steady for a longer period than had been expected. Building construction in April was disappointing, especially in view of the improvement noted in March. Awards of freight cars

in April, while slightly higher than in March, were at such a low level that the significance of the gain is negligible. Demand for steel for pipe line projects was more active in April, but the total thus far in 1931 has not been impressive.

Expect Few Important Changes in Business Until Third Quarter Arrives

In view of the absence of any indications of an immediate marked improvement in demand, industrial leaders now are predicting a sidewise movement of business until the third quarter, when they expect another rise in activity.

Commodity prices have declined steadily during the past six weeks. In March resistance to the long downward trend was more pronounced than at any time in a year. The temporary strength in the quotations of certain items was sufficient to cause Bradstreet's index of April 1 to show a slight gain over the figure of March 1. But this increase was wiped out almost as soon as the index was announced, and continued weakness throughout April carried Bradstreet's index of May 1 down to $8.9134. This is the first time since November, 1914, that it has dropped below $9.00. However in 21 out of the past 30 years, the May 1 index has been lower than that of the preceding April 1.

Commodity Prices Decline More Rapidly After March Interruption

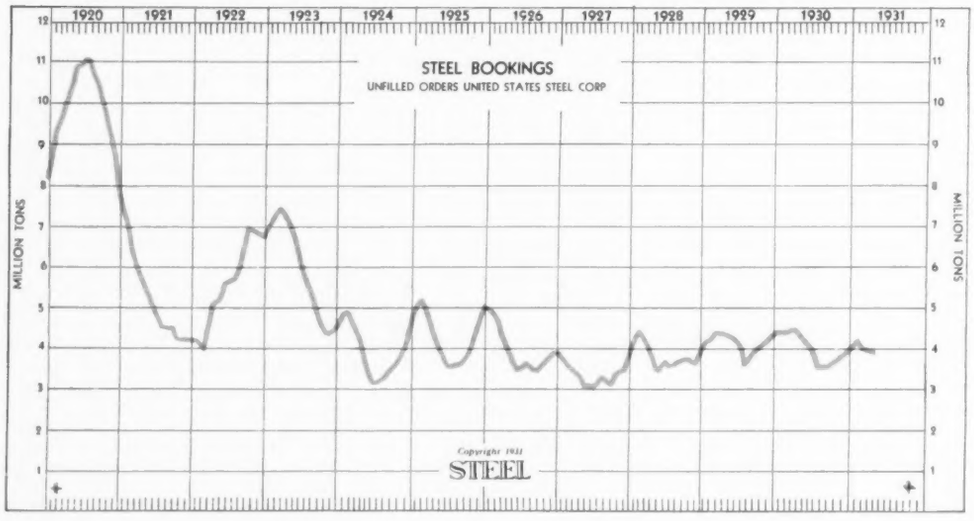
That commodity prices have not yet slackened their downward trend is indicated by the drop last week of Irving Fisher's index from 74.0 to 73.1, the largest decline in any week since December. The present index number, which represents the composite wholesale prices of 200 representative commodities, is the lowest since the war. A year ago it stood at 89.7; therefore a drop of 18 per cent in 12 months has occurred.

STEEL's composite of steel and iron prices declined to $31.40 as of May 6—a new low point for prices since the World war. The latest reduction was caused by adjustments in pig iron prices.

The combination of lagging activity in certain key industries, the continued weakness of prices and the sensitive action of the stock market to unfavorable earnings reports complicates the picture of business conditions. There are no sure signs of impending important changes—upward or downward.

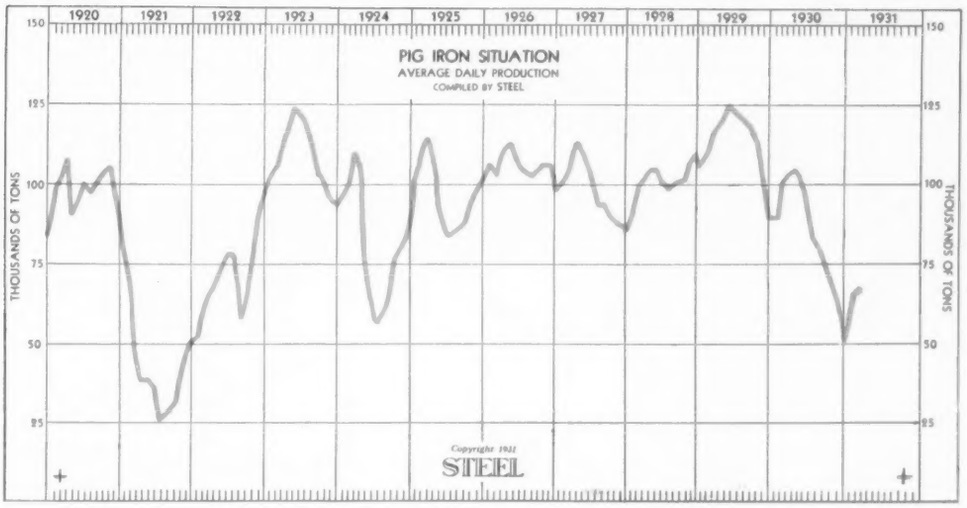
Steel Bookings Are Lower in April Despite Conservative Rate of Operations

The backlog of the United States Steel Corp. was 3,897,729 tons on April 30, as the result of a moderate decline which was not entirely unexpected. The drop amounted to 97,601 tons, a smaller loss than was sustained last year, when unfilled orders decreased from 4,570,653 to 4,354,220 tons. However, the decline in tonnage accompanied a period of conservative operations, indicating that orders were under even the reduced rate of production. Except in April, 1929, when a gain of 17,045 tons occurred, the fourth month of the year has for a number of years past suffered small declines. April unfilled tonnage this year is above that of 1926, 1927 and 1928, but is 330,034 and 456,491 tons under the 1929 and 1930 figures.



	1931	1930
April	3,897	4,354
March	3,995	4,570
Feb.	3,965	4,479
Jan.	4,132	4,469
	1930	**1929**
Dec.	3,943	4,417
Nov.	3,639	4,125

	1931	1930
April	67,017	106,371
March	65,448	104,930
Feb.	61,114	114,942
Jan.	55,337	91,573
	1930	**1929**
Dec.	53,732	91,513
Nov.	62,182	106,081

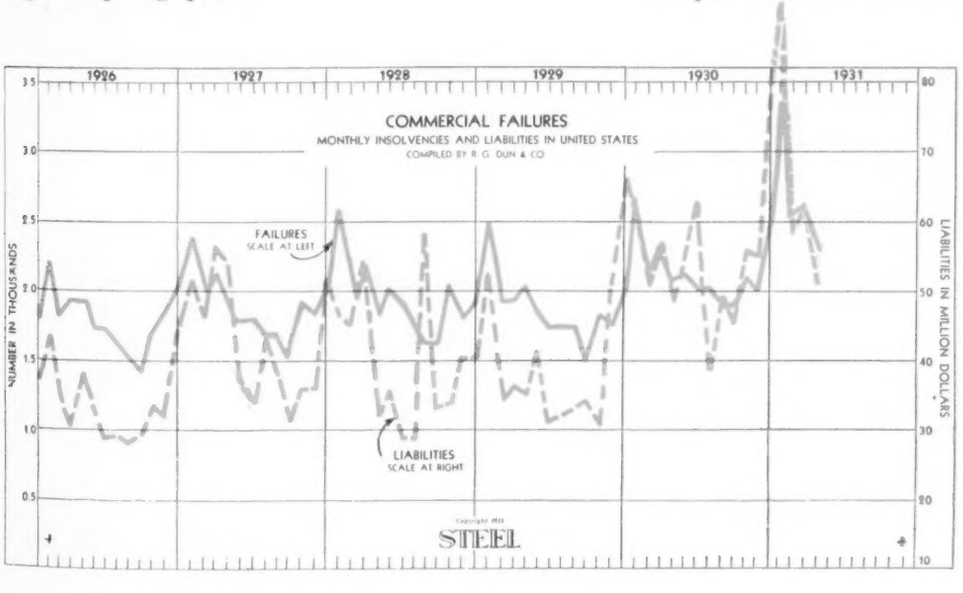


Fourth Rise in Pig Iron Output Amounts to 2.4 Per Cent

The daily average rate of pig iron production in April, 67,017 tons, surpassed the March rate by the slight margin of 2.4 per cent and registered the fourth successive rise. The tonnage rate remains far below April, 1930, when it rose to 106,371 tons, and is the lowest March output since 1921, at which time the daily average rate, at 39,691 tons, was plunging rapidly downward. Thus far in 1931 production of pig iron is 38.4 per cent below the like period of 1930. With two less blast furnaces in operation at the end of April and with slowly receding steelworks operations reported in the first half of May, it appears doubtful that iron production will reach a higher spring peak.

Business Failures Decline in Number And Liabilities during April

The rate of mortality in business enterprise dropped off in April to the lowest figure since last fall, the report of R. G. Dun & Co. shows. In number, defaults were 2386, the smallest since November. Compared with 2604 in March they represented a decline of 8.8 per cent, but they were up 7.7 per cent from a year ago. April failures of 1930 were 6.3 per cent below March of that year. Two years ago 2021 commercial firms failed. The financial loss involved during the past month was $50,868,135, compared with $60,386,000 in March. It was the lowest total since last September. During the first four months of the year liabilities increased about 21 per cent over the first four months of 1930.



Liabilities

April, 1931	$50,868,135
March, 1931	60,386,000
April, 1930	49,059,308

Number

April, 1931	2,386
March, 1931	2,604
April, 1930	2,198

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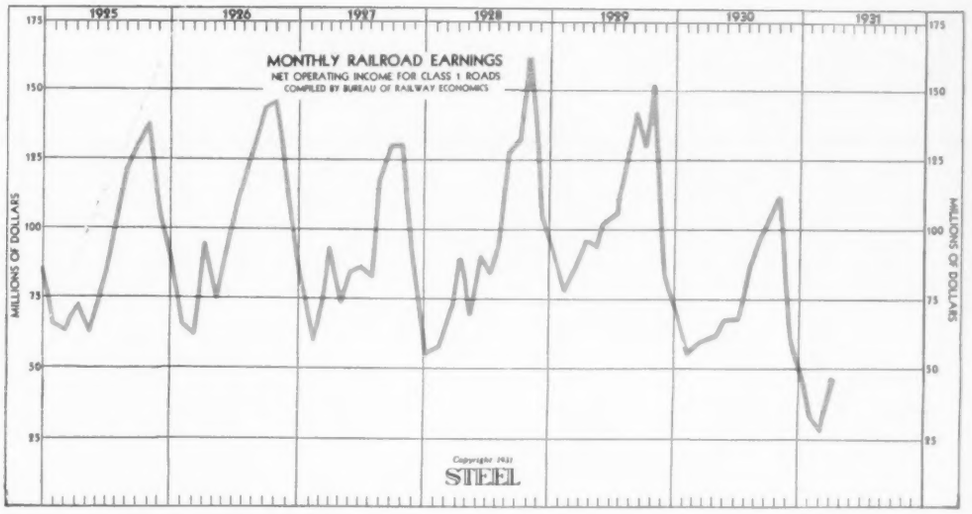


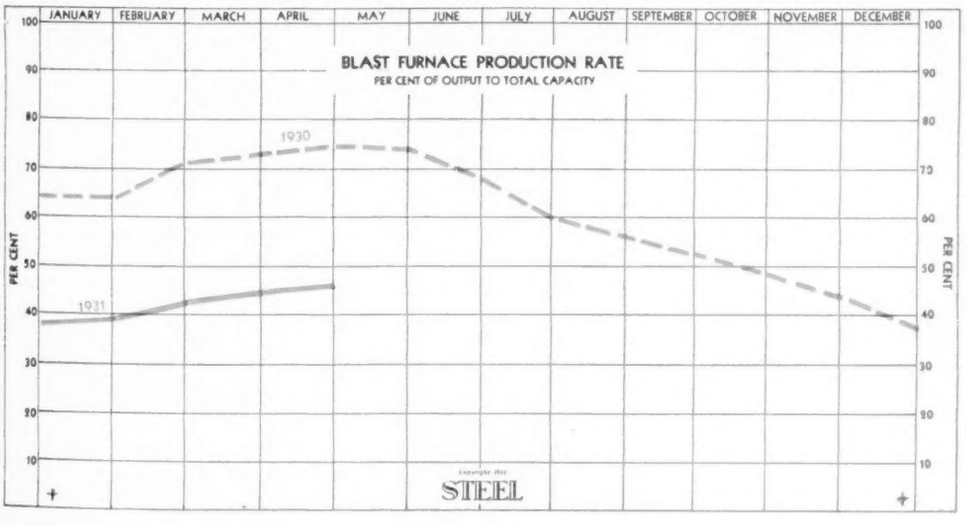
Million Dollars		
March	45.9	61.2
Feb.	27.2	59.4
Jan.	33.8	55.4
	1930	**1929**
Dec.	49.4	72.2
Nov.	62.1	86.6

Railroads' Net Income Makes Sharp Gain from Very Low Point

Up for the first time in five months, March railroad earnings gained 70 per cent over February and totaled $45,905,754. However, the net operating income for the month was about 25 per cent under March, 1930, and about 50 per cent under March two years ago, being the lowest for the month since the depression of 1920-1921. Earnings for March were at the annual rate of 2.22 per cent return on the property investment, compared with 1.67 per cent in February and 3.02 per cent in March, 1930. Net operating income for the first quarter of 1931 amounted to $107,098,448, or 2.07 per cent annual return, considerably under the initial quarter of 1930, when earnings were $176,542,859.

Rate of Blast Furnace Operations Up, Though Two Less Stacks Are In

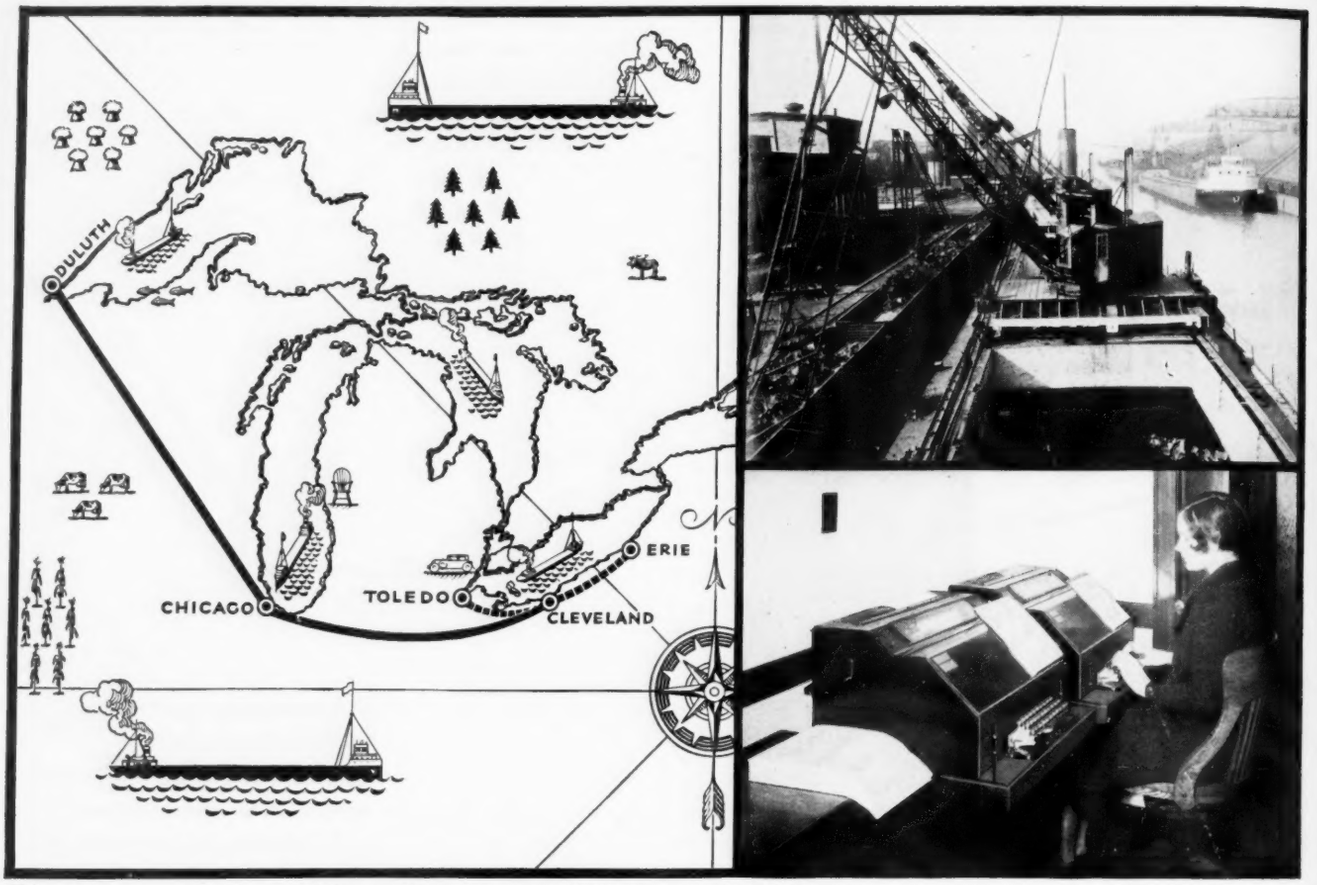
After traveling upward in small gains since last December, blast furnace operations rose a little over one point in April to 46.5 per cent of capacity. Progress has been from the low point of 38.1 per cent in the final month of 1930. Comparative April gains in recent years were from 74.5 to 75.4 per cent in 1930, 85.5 to 87.4 per cent in 1929 and 74.8 to 76.8 per cent in 1928. Due to the blowing out of four nonmerchant stacks and the blowing in of two, the number of furnaces in operation declined from 116 to 114, of a potential 310. A net loss of two stacks also took place in April, 1930, at the end of which time 182 were in blast. Two years ago 216 of a potential 326 were in blast.



Per Cent		
	1931	**1930**
April	46.5	75.4
March	45.4	74.5
Feb.	42.5	72.1
Jan.	38.4	65.0
	1930	**1929**
Dec.	38.1	65.5
Nov.	44.1	75.8
Oct.	49.6	82.6

IN DISPATCHING ORE STEAMERS ON THE GREAT LAKES, PICKANDS MATHER AND COMPANY USE

TELETYPEWRITER SERVICE



Teletypewriters connect the Cleveland, Chicago and Duluth offices. In addition, Private Wire Telephone Service links Toledo and Erie to the Cleveland headquarters

TELETYPEWRITER SERVICE* provides continuous and accurate channels of communication between headquarters, plants, sales offices and factory branches, thereby helping to speed up all production and administrative activities.

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All units—mines, docks, furnaces, sales offices, and general headquarters—are kept in constant typewritten contact by this modern method. Centralized control is made possible. Production at all units co-ordinated. Costly delays avoided.

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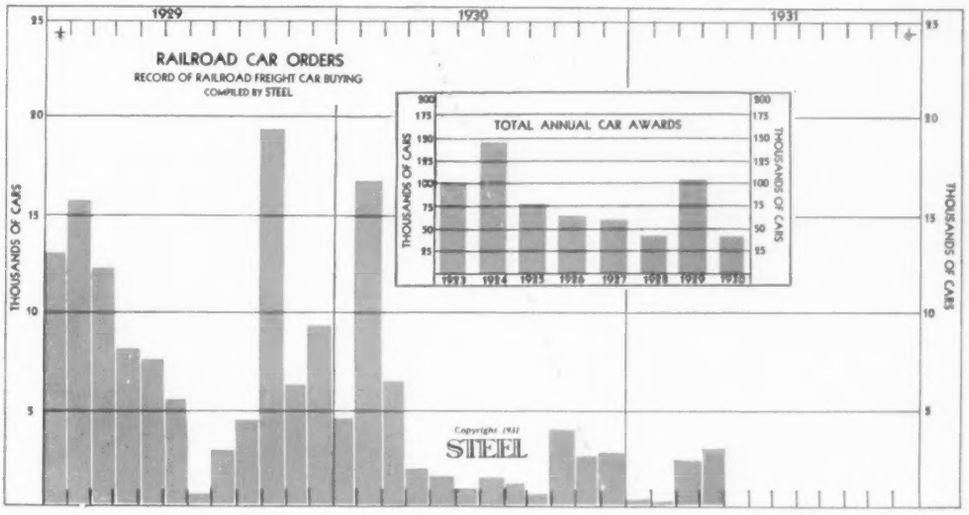
PURCHASES: Centralize purchasing for the entire organization. Receive supply requisitions, specifications. Advise factories, branches, of purchases made. Keep close check on arrival of purchases.

PRODUCTION: Receive production and inventory reports. Maintain close contact with sales and other departments.

TRAFFIC: Dispatch shipments. Obtain shipping dates and necessary information for tracing shipments. Issue routing instructions.



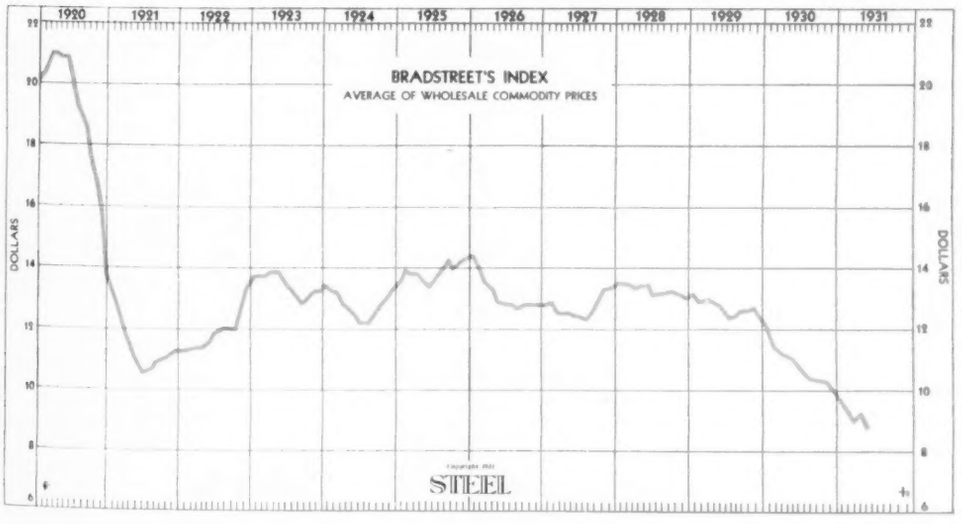
	1931	1930
April	2,798	1,997
March	2,166	6,118
February	50	17,027
January	100	5,072
	1930	**1929**
December	2,729	9,710
November	2,621	6,361
October	4,116	19,506

Railroad Freight Car Orders Improve, Surpass Buying of Recent Slack Months

Buoyed up chiefly by a single order, railroad freight car orders in April totaled 2798 units, giving the month the best record for any since last October, when 4116 cars were placed. In fact, they topped April, 1930, which was unusually quiet with only 1997 cars purchased, and excepting last October, were the best since March a year ago. Likewise excepting the figure for April, 1930, last month's orders were the lowest for April since 1921, when 350 cars were placed. Virtual suspension of activity in the first four months of this year has resulted in the placement of only 5114 cars, compared with 30,214 in the corresponding period of 1930, 49,368 cars in 1930 and 23,381 cars in 1928.

Wholesale Commodity Prices Break to Lower Ground After March Gain

Interrupted in the eighteenth month by a slight March gain in commodity prices, Bradstreet's wholesale price index in April continued its prolonged decline, to reach the lowest point since Nov. 1, 1914. As of May 1 it stood at $8.9134, a decline of 3.4 per cent from $9.2291 on March 1. Whereas the downward trend appeared to have been checked during recent months, the drop was again accelerated in April. The index is 22.9 per cent under that of a year ago. The Nov. 1, 1914, figure was $8.86. Lead by metals and textiles, nine of the 13 commodity groups represented fell in the past month. One remained unchanged, and small gains were made by coal, coke and building materials.



	1931	1930
May 1	$8.91	$10.94
April 1	9.23	11.18
March 1	9.17	11.22
Feb. 1	9.31	11.51
Jan. 1	9.51	11.68
	1930	**1929**
Dec. 1	9.84	12.23
Nov. 1	10.06	12.10

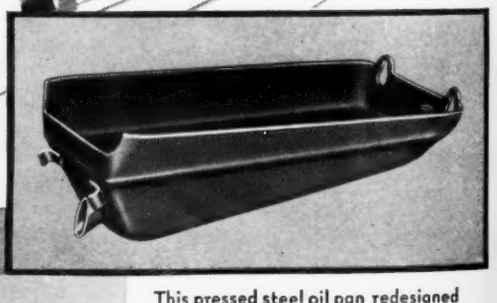
STRIKES a Smashing Blow at PROFITS

A SLIP of the hand—a crash! Another clumsy, brittle part or product that will never show a profit.

As an individual accident not much of a loss, to be sure, but when multiplied over a year's time, such breakage is a significant factor in excessive production costs.

Pressed Steel is saving such losses for many manufacturers. In addition, it is bringing lower initial cost of parts, less machining, a reduction of finishing costs, no misfit parts, lower handling and freight costs.

A close survey of your plant and product may demonstrate the advisability of incorporating the use of pressed steel. We shall be glad to put you in touch with reliable pressed steel manufacturers who will advise you without obligation. Write to Trade Research Division, National Association of Flat Rolled Steel Manufacturers, 511 Terminal Tower Building, Cleveland, Ohio.

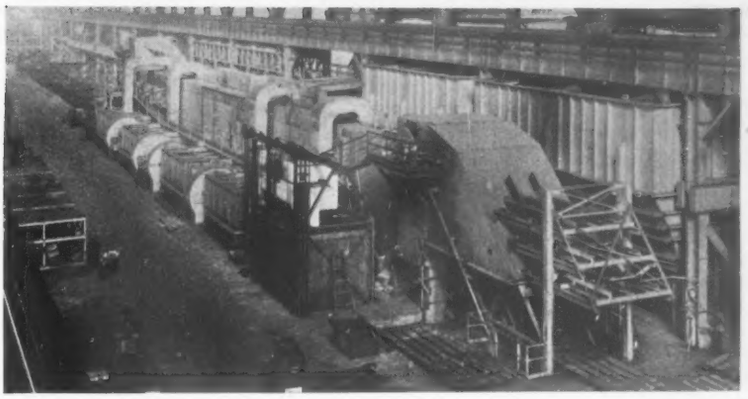


This pressed steel oil pan redesigned from the old heavy and brittle style weighs 22 lbs. less, stands vibration better, requires no finishing and has eliminated breakage.

Save

with Pressed Steel

BY E. C. KREUTZBERG
Eastern Editor, STEEL



Roller gravity conveyors receive the cores at the discharge end of the continuous oven which is 230 feet long

Effects Economies in Production of Heavy Steel Castings

ADVANCED engineering design and improved foundry technique have made possible the manufacture of steel castings of unusual proportions and extreme intricacy. It is now possible to produce large one-piece castings which replace similar units built up of many individual castings, notable examples being integrally-cast locomotive beds, tender frames, gondola bodies, freight car sides and other railroad equipment. This field is expected to be a continually expanding one, not only because integral castings are expected to resist corrosion more effectively than jointed rolled steel bodies, but also because integral castings do not have joints which require tightening and renewing periodically.

Obviously, castings of large size can be manufactured best in a plant specially designed for this class of work and provided with all necessary production equipment and materials handling devices. Convinced that many economies would accrue if work of this type were to be concentrated, several of the largest users of steel castings for railroads early in 1929 organized the General Steel Castings Corp. and made plans to build a $13,000,000 foundry at Eddystone, Pa.

A locomotive frame as it appears when lifted from the pit with all forming cores still in place. The multiplicity of risers can be seen over the upper surface

The companies associated in the ownership of the new company and having substantial financial interests in it are the Baldwin Locomotive Works, American Locomotive Co., Pullman Co. and American Steel Foundries.

Eddystone was selected as the site for the plant because the East constitutes a large market for railroad equipment; perhaps it is not generally known that the majority of freight cars in this country are on lines east of the Ohio river. Primarily, the plant is an extension to the East of methods developed some years ago in the plant of the Commonwealth Steel Co., Granite City, Ill., and now the Commonwealth plant of the General Steel Castings Corp. Based on experience at Granite City, the Eddystone plant was planned with the intention of applying modern mass methods to the production of large integral castings for railroad equipment.

In addition, the Eddystone plant is to fill a demand for large castings for a great variety of uses. Because of the problems of design involved, it is expected that the business in these large job castings will be a gradual development. The company is organized to work in close association not only with the railroads and car and locomotive builders, but with shipbuilders, marine engineers, the electrical industry, builders of heavy machinery and other industries which afford markets for large castings and which are concerned with the design and application of such castings. As an example of what is intended, it is pointed out that turbine speed rings previously have been cast in quarter segments with a resulting high cost for machining the joints. A one-piece speed ring is considered sound construction by engineers at Eddystone and it is expected that this problem will be worked out.

Incidently, this contemplated business in large job castings for various industries is another reason for the selection of Eddystone as a location for the plant. Many of these castings will be so large as to be utterly beyond the transportation capabilities of the railroads. An analysis of the potential market for large castings shows that those of maximum size are for use on or alongside water. Eddystone, with a deep-water location on the Delaware river just below Philadelphia, is an ideal location wherein to load large castings on ocean vessels for carriage to nearly all waterside locations in the world.

The new plant, which poured its first steel in 1930, has a capacity between 6000 and 7000 tons of castings per month, depending upon the character of the work. About two-thirds of this capacity will suffice to fill present normal integral casting requirements of eastern railroads; the other one-third is available for jobbing castings. At the present time, castings are being produced weighing up to 150 tons each, among these being locomotive beds replacing former assemblies of 240 parts cast separately, machined and joined together.

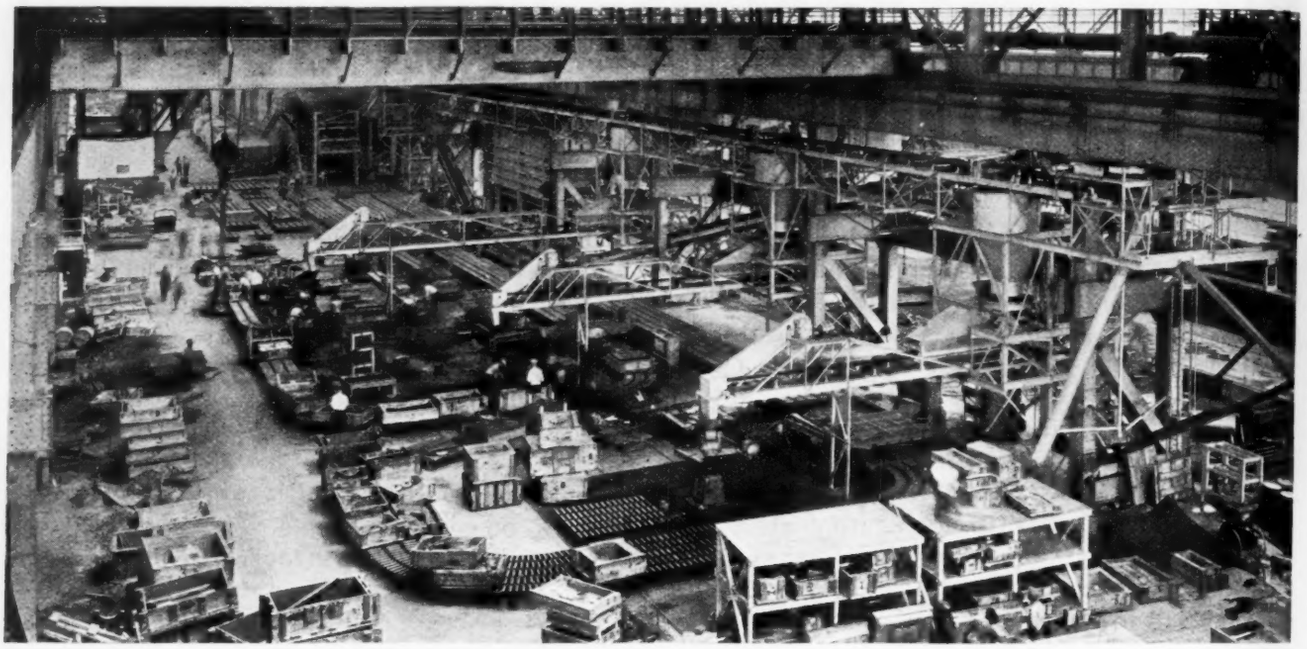
Principal departments of the plant are the foundry, pattern shop, pattern storage, machine shop, products transfer department, and maintenance shop. These buildings are on a site bounded on three sides by open water and on the fourth by the tracks of three trunk line railroads. The buildings are of steel concrete, brick and glass construction.

Inasmuch as the site was originally marsh land and has been filled in, all the buildings are provided with floors of macadam, which not only is resilient and flexible but which may be leveled up in case of settling. Space has been allowed alongside each building for two more units exactly like it, so that eventually the plant may be enlarged to three times its present size.

Many features of operation and design of equipment are to be found in the plant. A master flow chart governs every arrangement. Basic travel of the product from major operation to major operation also is the key which governs the flow of all secondary travel. All tributaries flow into main arteries and practically no back tracking or cross travel is noticeable. According to a set of traffic regulations through traffic has the right of way. Way station traffic is handled on a schedule which enables the entire flow system to function without interruption.

Steel is melted in three 50-ton open-hearth furnaces equipped with doors sufficiently large to admit scrap beyond the usual charging box size. This arrangement eliminates considerable cutting expense.

The ladles are of unique design,

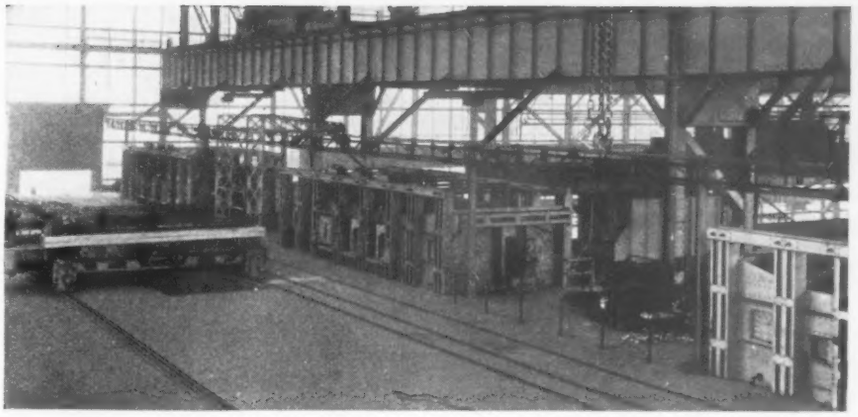


Some idea of the equipment and materials handling devices in the Eddystone plant is to be gained from this general view in the coremaking department

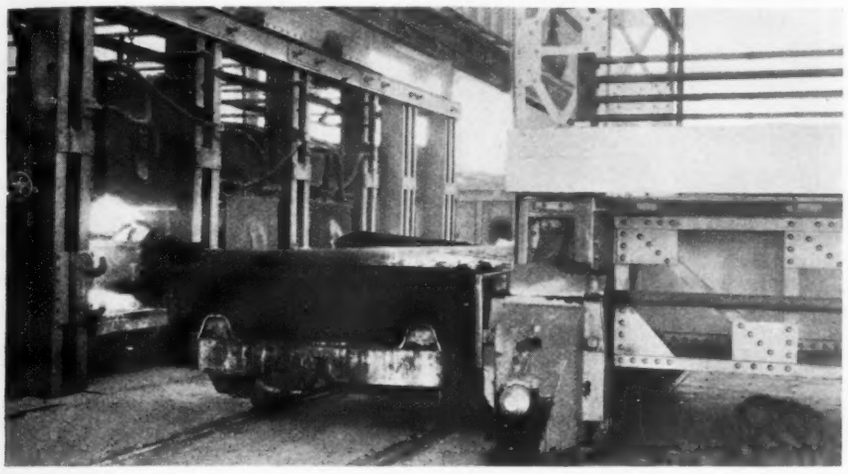
having universal pouring arcs of 180 degrees. The large ladles, having 60-ton capacity, also are unusual in being equipped with two stopper rods.

Handling equipment was installed so as to have the best arrangement on each handling problem consistent with the general movement and handling plan. Much of the travel is on gravity conveyors which are employed with unusual success. Cranes of proper sizes and types are installed wherever needed.

A fundamental consideration in designing the core department was that of making as low as possible the ratio of indirect work units to direct work units. In ordinary steel foundry practice it usually is necessary to heat between 5 and 10 pounds of iron to dry 1 pound of core sand. The entire core department is equipped with a suitable conveyor which permits the cores after being made and placed on plates to remain on these plates until dry. As a result, the Eddystone plant actually dries 10 pounds of sand by heating 1 pound of iron.



Charging floor of the three 50-ton oil-fired open-hearth furnaces



A charging machine dumps materials into the open-hearth furnaces

A new principle is incorporated in the construction of the foundry bays. The old pit method has been amplified in a new way, to the extent of making adjustments in the foundry floor throughout. The result is a uniform work level in the foundry and the saving afforded by this arrangement, particularly due to permitting the work to be laid down rather than built up, is appreciable.

Modifications in size and depth of the pits are in accordance with the requirements of each particular kind of molding job. The pits are all 20 feet or more wide and vary from 90 to 180 feet in length. One is 90 feet square. All range from 6 to 12 feet deep. Instead of flasks, structural steel forms are used to back up the cores and hold the molds rigid. The molds throughout are assemblies of cores. A mold for an integral locomotive bed, for instance, is an assembly of cores weighing between 50 and 60 tons; with the forms of the total mold, prior to pouring, weighs between 150 and 157 tons.

Unusual cleaning facilities have been installed. When a casting has cooled sufficiently, the mold without the forms is transferred by crane to a hopper in the foundry floor. A movable shakeout house, mounted on steel rails, is moved over the casting and the doors closed. Vibrators are attached to the casting and rock drills placed in operation. As the cores and sand are dislodged, the sand falls into a conveyor below and dust is drawn out of the house by exhausters.

Considerable thought was expended on the sand handling system which collects, screens, drys and returns the sand to one of two 800-ton storage bins.

While integral castings permit elimination of a great deal of machining which was necessary to prepare the joints for assembling groups of castings, a highly specialized machine shop layout is required for machining integral castings for locomotives and cars. On car and locomotive castings it has been customary to make individual set-ups for each separate machining oper-

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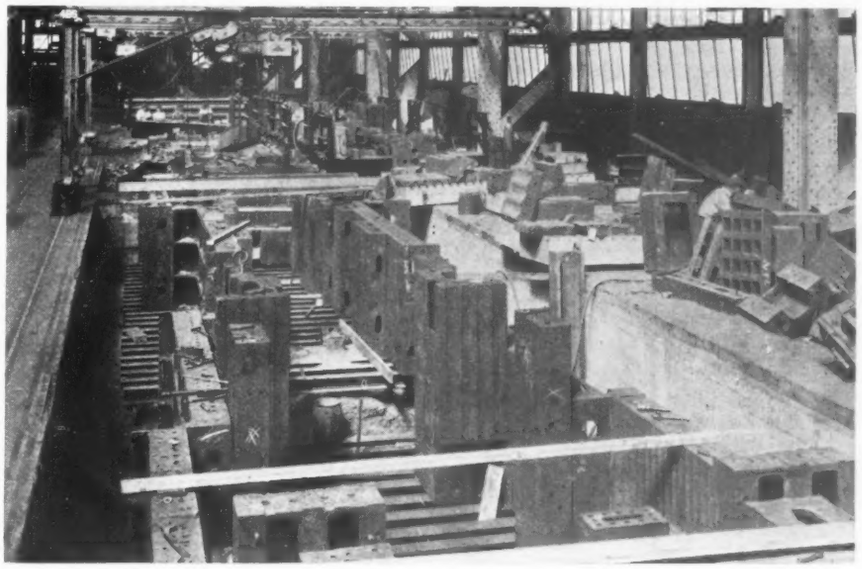

One of the pits in which cores are built up to provide molds for locomotive frames and other large castings

Society's Accomplishments Hold Member Interest

TO FINANCE projects which seem desirable and to meet the ever increasing cost of this work, American technical societies look to increased membership, but in attracting new members, they broaden their fields in the hope of interesting those who are concerned with problems in the broader fields. That this is a mistaken policy was emphasized by N. K. B. Patch, president of the American Foundrymen's association, in presenting his presidential address before the annual convention of the association in Chicago, May 4-7.

Mr. Patch pointed out that attempting to embrace too broad a field results in spreading too thinly over the chosen field with a conseuent inefficiency and lack of accomplishment. To increase interest of members is a laudable objective which must be accomplished to insure continued support, however, to embrace new fields to obtain increased interest, a more intensive cultivation of a limited field should be undertaken. In this way, in the opinion of President Patch, the association can accomplish a real service to industry as a whole, setting an example to all societies by intensively cultivating the field of the organization and doing it with an efficiency that will hold the interest of the members.

E. H. Ballard

Elected president of the American Foundrymen's association. He has been active in the association's activities for many years.

New Officers Elected

E. H. Ballard, general foundry and pattern shop superintendent, General Electric Co., West Lynn, Mass., was elected president of the American Foundrymen's association for the coming year. T. S. Hammond, president, Whiting Corp., Harvey, Ill., was named vice president.

Directors chosen, all for a three-year term, were as follows: N. K. B. Patch, secretary, Lumen Bearing Co., Buffalo; Fred L. Wolf, head of development engineering, technical and plant control department, Ohio Brass Co., Mansfield, O.; W. B. Moore, president, American Cast Iron Pipe Co., Birmingham, Ala.; A. B. Storie, Fittings Ltd., Oshawa, Ont.: and Dan M. Avey, editor, *The Foundry*, Cleveland.

Mr. Patch, the retiring president, was elected to honorary membership in the association in recognition of his services.

At the annal banquet of the association, R. S. MacPherran, Allis-Chalmers Mfg. Co., Milwaukee, was presented with the J. H. Whiting gold medal in recognition of his outstanding accomplishments in the metallurgy of gray iron castings. In awarding the medal, Past President Fred Erb stressed the value of scientific advance and the far-reaching effects of the contributions to the advancement of science made by Mr. MacPherran.

About 250 manufacturers of foundry equipment and supplies attended the annual exhibitors dinner arranged under the auspices of the association and the Foundry Equipment Manufacturers' association.

Interest of foundry instructors of engineering schools in the problems of the foundry industry was displayed at the annual dinner of that group. Prof. J. D. Hoffman, Purdue university, Lafayette, Ind., stated that a certain lack of co-operation on the part of industry has hampered seriously the development of foundry short courses. As a rule, he said, universities are willing to meet industry half way in preparing a program, but the initiative must come from industry.

Foreign Situation Explained

As a result of the policy of free imports which has been in operation in Great Britain for about a century, and because of a considerable export business, the foundry industry in that country is more varied than in most other countries. This was the opinion expressed in the annual exchange paper of the Institute of British Foundrymen, "Some Notes on the Structure of the British Foundry Industry," written by Vincent C. Faulkner, editor, *Foundry Trade Journal*, London. The paper discussed the technical and scientific organization of the industry, standardization work, and the important phases of the steel, malleable, nonferrous and certain phases of the gray iron industry.

Apprentice Training Recognized as Valuable Aid to Foundry Industry

MEN constitute the most important factor in the foundry industry, according to C. J. Freund, Falk Corp., Milwaukee, chairman of the committee on foundry apprentices of the American Foundrymen's association, speaking at a session on apprenticeship training, during the annual meeting of the association in Chicago.

A paper, "Related Class Room Training for Foundry Apprentices," was presented by S. M. Brah, apprentice supervisor, Tri-City Manufacturers association, Moline, Ill. This paper represented the results of a survey made by the author to determine the related instruction being given foundry apprentices in plant and municipally conducted training courses. The report gave the amount of time spent on instuction in related subjects, the type of courses covered, costs of conducting courses and other factors of importance.

In the discussion which followed, W. F. Simon, Industrial Commission of Wisconsin, Madison, Wis., stated that the initiative must come from the foundrymen. Best results should be obtained by organizing local and state groups of those interested He spoke of the value of class room instruction in connection with any foundry apprentice course. F. K. Ferguson, apprentice supervisor, East Chicago Public Schools, East Chicago, Ind., stated that it is necessary to have a definite schedule for the class work so that the foreman may know just when the apprentice will be out of the shop. To get co-operation in the class room and shop work, it is necessary to first

sell the foreman on the value of class room attendance in the development of the boys. Unless the foreman is in sympathy with the program, it cannot succeed to the best advantage.

H. S. Falk, Falk Corp., Milwaukee, explained that in his plant the company has the system of having several older apprentices to act as pinch hitters for the machines operated by apprentices. These men usually are in the last year, and not only do they fill in for the absent apprentices, but also for absent mechanics. This system works to the advantage of the company and the boy, for while all of the machines are kept busy, the boy is permitted a varied experience probably not otherwise possible.

Mr. Falk also stressed the importance of local groups developing programs of community apprentice training. Attention and hard work, with some one person made responsible for the enterprises are essentials for success in such a movement.

Balance Quality Against Time In Melting Operations

IS IT more important to turn out a heat of steel from an electric furnace in 1¼ hours or is it more important to turn out a quality product, melted under ideal furnace conditions? In answer to this question, F. A. Melmoth, Detroit Steel Casting Co., Detroit, deplored the present-day mania for speed in melting operations and the sacrifice of quality for speed records, in a paper presented at the annual meeting of the American Foundrymen's association at Hotel Stevens, Chicago, May 4-7.

In discussion following Mr. Melmoth's remarks, it was pointed out that although quality castings are essential, the time factor is important and too long a period in the furnace is equally deleterious to a heat of steel as too short a period.

New Classification for Steels?

Commenting upon chemical composition as employed for classifying carbon and alloy steels for castings, Maj. R. A. Bull, Electric Steel Founders Research Group, Chicago, pointed to the need for a new classification of steels. It was suggested that this classification should show definitely the amount of each alloy present and also the physical properties, these data being of value to both steel producer and consumer. Several technical groups are working at present on this subject and nomenclature and specifications cannot be adopted until present development work is finished. On motion, the meeting went on record in favor of requesting the American Foundrymen's association to appoint a special committee to study the subject.

C. W. Briggs and R. A. Gezelius, Naval Research Laboratory, Anacostia, D. C., described the gamma-ray method of detecting defects in castings, claiming that a penetration of 10 inches is possible with this method, contrasted with a penetration of about 3½ inches by X-ray methods.

Embrittlement and consequent low ductility of carbon steel castings, are promoted by alumina in the steel resulting from the addition of aluminum deoxidizer, according to George Batty, Steel Castings Development Bureau, Philadelphia. Mr. Batty has made a study of pin-hole porosity and its relationship to low ductility. The solution to low ductility, pin holes, embrittlement, etc., lies in the use of a green molding sand of proper constitution and composition, he said, further directing attention to the fact, sometimes overlooked, that the backing sand should be more permeable than the facing sand.

Centrifugally Cast Guns

Guns of centrifugally cast steel embody certain advantages over forged guns, according to Col. Tracy C. Dickson, Watertown Arsenal, Watertown, Mass., who described a method of centrifugal casting developed some time ago at the Watertown arsenal. Advantages include remarkable ductility, absence of pipe, greater density of metal, a saving of 35 per cent in metal, saving in time, a gun of one piece and capable of withstanding higher stresses.

The steel used for centrifugal casting, melted in a high-frequency induction furnace, analyzed as follows, in per cent: Carbon 0.35, manganese 0.61, phosphorus 0.016, sulphur 0.028, and silicon 2.45, with slight amounts of molybdenum and vanadium added. The centrifugal process drives the impurities in the metal to the bore of the gun, and therefore the carbon content is higher at the bore. The metal at the bore is under high compression which is not entirely removed by annealing, normalizing and heat treating. Colonel Dickson pointed out that because all this compressive force is not eliminated the centrifugal casting is stronger than a similar forged piece.

Casting may be made either in a chill or a refractory lined mold, but the experience of the Arsenal has been that a better structure results from the rapid cooling induced by a chill mold, the life of which should be about the same as that of an ingot mold. Castings weighing from 200 to 720 pounds have been produced centrifugally.

Two aims of the efficient steel foundry cleaning room are to expedite work and turn out a presentable, saleable product; and second to accomplish the desired purpose at the lowest cost. These points were emphasized by E. F. Wilson, Indiana Harbor works, American Steel Foundries, who outlined cleaning room practice at a shop operation for steel foundrymen. To accomplish the two previously mentioned aims, one plant may resort to different methods and different equipment from another. As an instance of this the General Electric Co., Schenectady, N. Y., a few years ago changed gas for cutting torches from oxyacetylene to illuminating gas and oxygen, boosters in the plant raising the gas pressure to working limits. A discussion of this system was presented by J. M. Sampson of the General Electric Co. Representatives of other plants cited various reasons why a similar arrangement was not feasible in their organizations.

Grinding Costs Considered

Charts for computing grinding costs precipitated a lively discussion of speeds and life of grinding wheels. A typical report showed a peripheral speed of 8500 feet per minute, at which 30 pounds of steel per hour was removed for 27 hours. In another instance a wheel removing 28 pounds per hour remained in service for a total weight of metal removed of 1100 pounds.

Further discussion in a shop operation course for steel foundrymen centered around the nitriding process. This hardening method is operated under license by several prominent steel foundries, and as applied to castings presents four main characteristics: Imparts a brinell hardness of 900 to 1100 to the surface of the casting; renders the metal noncorrosive; resists temperatures up to 900 degrees Fahr. for prolonged periods, and up to 1400 degrees Fahr. for short periods; and does not distort the casting.

Iron and Steel Industry To Receive Radio Salute

Aims and achievements of engineers whose work is devoted to the production of iron and steel will be signalized in a Westinghouse radio salute, Sunday evening, May 31, at 8:45 p. m., eastern standard time. The program, to be broadcast over a chain of 26 stations, will feature a musical program and an address by F. O. Schnure, president of the Association of Iron and Steel Electrical Engineers, describing the work of that organization.

Modern Foundry Equipment Exhibited at Show

PRACTICALLY all types of modern foundry equipment and materials were on display last week at the exhibition held in conjunction with the thirty-fifth annual convention of the American Foundrymen's association at Hotel Stevens, Chicago. Although the exhibition was of a restricted nature, as is customary every other year, approximately 45,000 square feet of floor space was occupied by 167 exhibitors. Attendance was about 3500, slightly greater than that of the similar exhibit held two years ago, and was most gratifying, according to officials.

Several companies exhibited melting units and accessories. Low-frequency and high-frequency types of induction furnaces, and arc furnaces were shown, along with castings produced in these units. Photographs of typical furnace installations were prominent, and castings in gray iron, steel and malleable iron were displayed to illustrate quality of melting practice obtainable. Representative castings in bronze, brass and alloy steels also were shown, as well as several types of gas-fired melting furnaces, for production of these alloys. Core ovens of several types were shown, in addition to cupola blowers and similar essentials.

Material handling equipment occupied a featured position, comprising cranes, hoists, buckets, conveyors, trucks, monorails and similar equipment utilized in the solution of material handling problems in the foundry industry. As an interesting departure from previous exhibitions, six manufacturers of electric hoists were grouped together in a single display space, thus concentrating attention upon their equipment. Hoists, both electric and handpower, ranging in capacity from 500 pounds to 3 tons, clamshell and orange peel buckets, gasoline driven trucks, numerous types of conveyors and other miscellaneous equipment for movement of materials were on display.

Devices for Cleaning Room

Equipment for cleaning castings was much in evidence, displays encompassing such items as sandblasting cabinets, tumbling equipment, stand grinders, heavy-duty swing-frame grinders, a wide range of grinding wheels, grit and shot abrasives and cutting and welding apparatus.

Molding machines, although not exhibited in the number and variety usually seen, included the products of most all manufacturers of this type of equipment. The sand, dust and clatter of operating exhibits were absent, although a number of machines were connected to air lines to illustrate operating movements.

One company showed a high-speed jar rollover molding machine equipped with automatic fluid timing valves to regulate the speed and number of strokes for any given mold. A second exhibit featured a new type rollover squeeze machine in which the mold is rolled over during the squeezing operation, no clamping or leveling devices being required, and the pattern being drawn on the reverse stroke of the squeeze piston. An oil-controlled rollover jolt machine, featuring improved rollover equipment and with all operating mechanism enclosed in a cast iron housing, attracted attention.

Exhibited for the first time was a new sand handling unit, T-shaped, the cross member constituting a shakeout device and the main member a tempering belt. Castings are shaken out through the vibration of the cross member, which also causes the castings and scrap to move along the shakeout grid to one end. The sand falls through the guide to a tempering belt which carries the sand to a sand separator and blender for reuse. Sand throwing machines for mixing and blending molding sands, electrically driven gyratory riddles and a gyratory shaking device, double deck and single deck vibrating screens, a sand mixing machine equipped with sand aerating device at the discharge gate, and an electrically driven vibratory foundry riddle constituted other equipment in the category of sand handling and conditioning devices.

Various types of flasks and pattern equipment were shown by a large group of exhibitors. Steel flasks, wooden snap flasks, aluminum and steel pattern plates, finished and unfinished bottom plates and core plates, copper pattern equipment, matchplates, pattern mounts, squeezer plates, core boxes, pattern

(*Concluded on Page* 52)

GENERAL view of the ballroom of Hotel Stevens, Chicago, during the exhibition of foundry equipment held there last week

Vibration of Dross Affords Higher Zinc Recovery

BY WALLACE G. IMHOFF
President, Wallace G. Imhoff Co.

DROSS production is important to every galvanizer. Most operators are unaware of the wide variation in the quantity of dross produced, and in its chemical composition. Moreover, executives frequently overlook the opportunity of effecting large savings in this by-product of the hot-galvanizing process. While some attempt is made to recover part of the metal in dross, those unfamiliar with the principles involved in controlling its composition usually consign the material to a metal dealer, rather than to a recovery plant.

Fig. 1—Photomicrograph of ordinary galvanizer's dross. The black areas shown are zinc-iron alloy. X36

Dross is a zinc-iron alloy. Commercial galvanizer's dross is the zinc-iron alloy which settles at the bottom of the galvanizing bath, and has to be removed about once a week by an operation known as "drossing." When starting a new pot, the zinc in the kettle ranges from about 0.06 to 0.08 per cent iron. After two to three weeks' operation, depending upon the quantity of steel passed through the pot and the temperature of the bath, the zinc becomes saturated with iron.

Saturation of the bath at ordinary galvanizing temperatures occurs when it reaches from 0.10 to 0.13 per cent iron. From then on the zinc-iron crystals start to settle out. With careful operation from five to six weeks elapse before the bath becomes saturated with iron and the dross crystals starts to accumulate in the bottom of the pot. The black areas in Fig. 1 are zinc-iron alloy or dross crystals, and the light area between is the saturated zinc bath.

The chemical composition of dross always represents the analysis of both metal between the crystals and the zinc-iron alloy crystals themselves. The wide variation in the chemical composition of dross from pots in practical operation is shown as follows:

Dross Analyses

Zinc, per cent	Iron, per cent	Lead, per cent
96.67	3.33	.....
97.21	2.79	.....
96.14	3.86	.....
79.39	2.61	.....
94.33	5.67	.....
90.88	9.12	.....
96.44	3.56	.....
95.82	3.98	0.19
96.28	3.50	0.21
97.54	2.46	.....

The variation in iron content of dross is due to the heat in the bottom of the kettle, the kind of zinc-iron alloy crystals and the efficiency of drossing operations. Heat not only affects the chemical composition of the dross, but also its crystal form. Below 900 degrees Fahr. most of the dross crystals are long, slender needle-like crystals, while above this temperature they change to a pyramid form and are much higher in iron content.

Dross formerly was "sweated" to recover the zinc value. The procedure evidently was derived from the fact that as the heat increased in the bottom of the pot, the metal between the crystals went into the bath. In some plants the reclaimed zinc in the dross was slabbed and recharged into the kettle, the residue being sold as a by-product. The coating frequently was dry and brittle, and peeling and flaking developed to a high degree. When this occurred addition of "reclaimed zinc" to the bath was discontinued until the difficulty was overcome. But faulty coatings frequently resulted, accompanied by a high-dross production. Finally with much continued grief, the use of this reclaimed zinc would be discontinued entirely and the dross sold.

A variation exists in the quantity of dross produced in various branches of the galvanizing industry. The American Zinc institute reports a total zinc production of 630,817 tons in 1929. Of this production 595,005 tons of zinc was used for domestic consumption. The American Bureau of Metal statistics estimated the total use of zinc for galvanizing in 1929 at 290,000 tons, including 4050 tons reported as having been used in electrogalvanizing. This gives a balance of 285,950 tons used for hot galvanizing which is 48 per cent of the amount of domestic zinc. Zinc used for hot galvanizing in 1929 is shown as follows and, in more detail, in Table I:

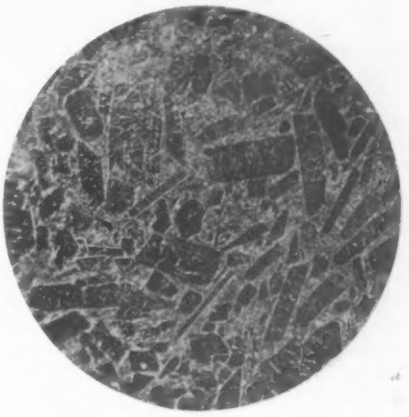

Fig. 2—Photomicrograph of vibrated dross. Crystals are in a compact form as a result of metal removed

Zinc Used for Hot Galvanizing, 1929
(In tons of 2000 pounds)

Commodity	Tons
Sheets	142,800
Tubes	51,700
Wire	38,000
Wire cloth	9,700
Shapes	43,300
Total	285,500

Comparative operating results are shown in Table II and the quanti-

CROWDING the zinc-iron crystals in galvanizing drosses closely together has a drastic effect on the quantity of zinc recovered and the drossing time. A mechanical means for obtaining this compactness, methods for removing the by-product from the galvanizing kettle and cautions in using reclaimed zinc are discussed in the accompanying article. The author, Wallace G. Imhoff, is president of the Wallace G. Imhoff Co., Vineland, N. J.

TABLE I

Details of Galvanizing Practice in 1929

(In tons of 2000 pounds)

Product	No. of Companies reporting	Production	Zinc used	By-Products Dross	By-Products Skim	Ashes	Total	Zinc coating
Sheets	28	1,103,733	100,891	9,740	4,554	388	14,682	86,209
Tubes	14	391,828	37,548	6,731	1,697	2,602	11,030	26,518
Wire	22	361,440	16,140	3,272	1,461	131	4,864	11,276
Wire cloth	12	30,223	8,104	1,048	510	18	1,576	6,528
Structural	10	41,632	2,881	601	140	118	859	2,022
Sheetware	19	44,663	10,462	844	301	665	1,810	8,652
Pole-line hardware	11	92,264	8,817	2,898	945	236	4,079	4,738
Castings	9	6,739	600	266	30	20	316	284
Miscellaneous	53	124,403	12,104	3,202	674	739	4,615	7,489
Unclassified	10	.....	1,881	903	59	66	1,028	853

ties of by-products per ton of zinc used in 1929 in Table III. The figures included in the tables show that in the various branches of this industry there is a wide variation in the amounts of dross produced. In the pole-line hardware and castings field the dross production is high. In one instance an average dross production of 52 per cent for the year was reported, while in another instance the output was 65 per cent. The latter figures show a serious failure in the design of the galvanizing furnace.

How Dross Is Removed

In improving the efficiency of drossing operations in the average plant, the first factor to consider is the average method of drossing. A perforated spoon or scoop is employed to bring the dross to the surface of the bath where it is held, while three or four men slice and place it into molds. While the process is simple, there is considerable variation in results attained from plant to plant.

In one plant the spoon was large and shallow, and the holes small and about 6 inches apart. The dross was sliced in the usual manner but since there were no holes to run out, the zinc merely collected in the bottom of the dross. Since dross is composed of metal and crystals, the best method is one that will shake this metal from between the crystals quickly, after the spoon has been raised out of the bath and before the metal freezes. Cutting and slicing is too slow to recover much metal before it solidifies. Any type of equipment which will act quickly and effectively to shake, or vibrate this molten zinc from between the crystals immediately after the scoop has been raised will increase the efficiency of this operation. One type of vibrator used for this purpose is attached to the handle, or more efficiently, to the side of the drossing scoop as soon as it is raised out of the bath. The vibrator is actuated by compressed air at 60 to 80 pounds pressure and requires about 40 cubic feet of air for the time it is operated.

This method duplicates the cutting and slicing operations more quickly and efficiently. In addition, it is a more efficient method of recovery, as is seen in Fig. 2. By using a square scoop and fastening the vibrator directly on the side instead of the handle, even better results can be obtained.

When the scoop is raised the vibrator is attached, and the air applied. Vibration is continued for about one-half minute after which the dross is cut and sliced and then vibrated again for about the same length of time. The effect upon dross of crowding the crystals together closer is shown in Fig. 2. The zinc-iron alloy crystals are closer together than those shown in Fig. 1. By using this equipment the quantity of dross produced can be reduced from 10 to 20 per cent depending on its character. "Wet" dross shows a much larger saving than "dry" dross, but for average dross a considerable saving in zinc can be made, in addition to cutting down the drossing time.

TABLE II

Comparative galvanizing results for 1929

Product	Ratio of zinc coating to finished products, per cent	Ratio of zinc melted to finished products, per cent	Ratio of zinc dross to zinc melted, per cent
Sheets	7.81	9.14	14.55
Tubes	6.77	9.58	29.64
Wire	3.12	4.47	30.41
Wire cloth	21.60	26.81	19.45
Structural	4.86	6.92	29.82
Sheetware	19.37	23.42	17.30
Pole-line hardware	5.14	9.56	46.26
Castings	4.21	8.90	52.67
Miscellaneous	6.02	9.73	38.13
Unclassified	.....	.....	54.65

TABLE III

By-Products Per Ton of Zinc Used in 1929

Products	Dross, per cent	Skimmings, per cent	Ashes, per cent
Sheets	0.102	0.090	0.005
Tubes	0.189	0.090	0.092
Wire	0.213	0.181	0.011
Wire cloth	0.136	0.126	0.003
Structural	0.220	0.097	0.052
Sheetware	0.085	0.058	0.085
Pole-line hardware	0.346	0.214	0.036
Other castings	0.467	0.102	0.045
Miscellaneous	0.278	0.111	0.081
Unclassified	0.506	0.062	0.048

Advisory Board Outlines Research Work for Year

Members of the metallurgical advisory board to the Carnegie Institute of Technology and the United States bureau of mines, Pittsburgh, met May 6 to outline research work for the coming year. New problems that will be studied include the viscosity of lime, silica and fluorspar slags, and the melting points in the slag system of manganese oxide, silica and alumina. Three research fellows will be assigned to these subjects while others will continue the present program.

More Facts, Fewer Opinions

Speaking before the group George G. Crawford, president, Jones & Laughlin Steel Corp., Pittsburgh, stated that manufacturers of steel are looking forward with interest to the day when they can base manufacturing operations on facts rather than opinions. Other speakers among the 20 members and ex-officio members of the board were E. S. Fickes, vice president, Aluminum Co. of America; C. W. Heppenstall, president, Heppenstall Co.; John Johnston, director, department of research and technology, United States Steel Corp.; Dr. F. M. Walters Jr., director of the metallurgical research bureau at the Carnegie Institute of Technology; and Dr. V. N. Krivobok, metallurgist.

Dr. C. H. Herty Jr., in charge of the current program on the physical chemistry of steelmaking, reported progress in the study of deoxidation with silicon-manganese alloys in the open-hearth furnace. Four research fellows, three research engineers, four analysts, one laboratory assistant and five members of the bureau of mines staff are at work on this subject.

About $95,000 has been contributed to the metallurgical advisory board by steel companies in the last five years for its work, it was reported. Plans were discussed for the fifth open meeting of the board to be held in Pittsburgh Oct. 16.

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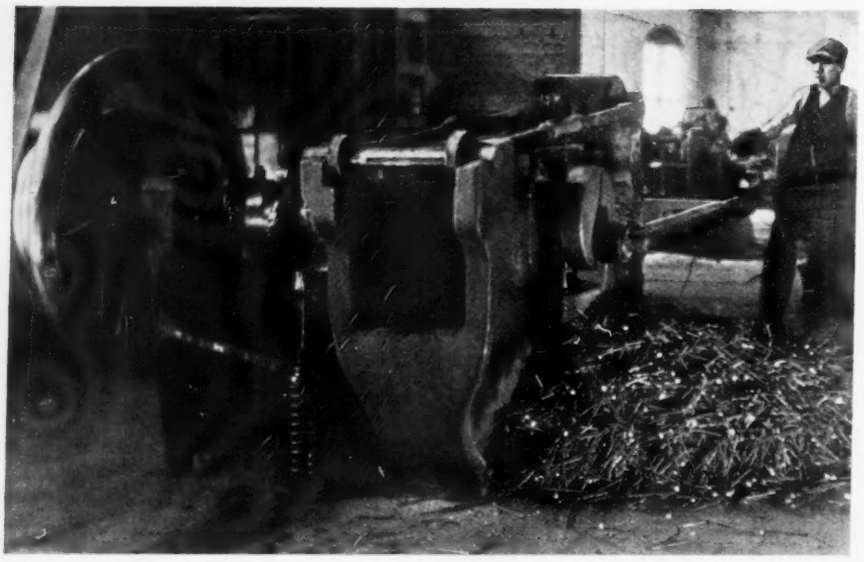

Courtesy Colorado Fuel & Iron Co.

Making nails: The wire passes through straightening rolls; gripped by dies, while the head is upset; forced through the required distance and cut off, cutters forming the point

Large Uses of Steel in Small Ways

191st Article ◆ Wire Nails

MANUFACTURE of wire nails consumed 1.6 per cent of all the rolled steel made in the United States in 1930. According to the American Iron and Steel institute's current report, 9,561,414 hundred-pound kegs were produced last year, equivalent to 478,070 tons. The average for the past ten years, however, is 706,624 tons of wire nails. The average for cut nails, mainly steel, is 33,624 tons.

An important manufacturer estimates that 85 per cent of all wire nails are made of low-carbon bessemer steel. Nails used for the majority of purposes must be hard and stiff so they will not buckle. Those intended for clinching must be made of softer steel. Some special grades are made of high-carbon steel.

Definitions are important. "Wire nails" include all sizes made from wire on nailmaking machines. Some of the smaller sizes are used as tacks, though the familiar carpet tacks are made from flat strips of steel known as tack plate. Railroad spikes are made by any manufacturers who make nails, and are grouped with nails in catalogs, but they are not included in the steel tonnage properly accredited to wire nails.

There are endless varieties of shapes and sizes. One producer makes 400 different types, types having no reference to sizes. A few of these classifications are: Casing, brads, siding, metal lath, fence, shingle, slating, roofing, lath, shade, plaster board, clinch, hoop, gutter, saddlery, foundry, concrete, clout, barrel, berry box, basket, hinge, wagon, car, boat and egg-case nails. There are nails with numerals embossed on the heads; nails with double heads to facilitate easy removal from lumber, nails with barbed shanks, nails with heads that seal the holes when driven into galvanized sheets, so that water cannot seep through and damage the roof or siding.

All Shapes and Sizes

Further, in regard to the shapes of nails: Some have diamond points, especially long sharp points, chisel points, points made especially for clinching, and some, have blunt points. Heads are flat, oval, counter sunk, some extra-deep counter sunk, and some extra-wide and flat. The "right nail in the right place," evidently is the motto of nail manufacturers, as a particular type of nail can be found for each purpose to which a nail can be applied.

Nails are galvanized, coppered, blued, coated with cement. They are nickel plated for certain purposes and because lathers carry their nails in their mouths the lath nails are sterilized at a temperature of 350 degrees Fahr. for 40 minutes. These nails are never touched by human hands until they reach the consumer.

The largest size wire nail made for commercial purposes is 1 foot in length, and ⅜-inch diameter. It weighs approximately 1 pound, 10 ounces. Ths smallest is ¼-inch in length and made of 26-gage wire, slightly larger than that of a pin. It requires 65,000 of these small size nails to make up a pound, and one machine will be engaged 350 hours to fill a 100-pound keg.

Automatic nail machines make 125 to 750 nails a minute, depending upon the size. The wire from a coil is first fed through a guide to a series of straightening rolls, thence to the gripper dies. It is generally supposed that the barbs on the shanks of nails are put there intentionally so that the nails will hold better in wood. This is an advantage, though the barbs result incidentally from the wire being gripped in the dies. As the wire is gripped the head is upset. The wire is then forced through the required distance for the nail, and cut off, the cutters forming the point.

The penny system of designating nails originated in England. One explanation is that sixpenny, fourpenny, tenpenny nails derived their names from the fact 100 cost six pence, four pence, and so on. Another is that 1000 tenpenny nails, for instance, weighed ten pounds. The designation persists in the nail industry.

The invention of the wire nail is credited to France where the first wire nail machine was built in 1834. Wire nails were first made in America in 1854.

Approve Sales Agreement

The standard sales agreement and trade customs of the Gray Iron institute, developed about a year ago, have been approved by the iron and steel committee and the executive committee of the National Association of Purchasing Agents. This action, it is thought, will assist further in the establishment of a definite set of conditions covering the relation between the buyer and seller of castings.

Occupies More Floor Area

Most of the plant formerly occupied by the Youngstown Boiler & Tank Co., Youngstown, O. now is being used by the Cold Metal Process Co. which markets the Steckel-type strip mill. Energies of the company are being devoted to the licensing of its mills on a royalty basis for the rolling of steel, aluminum, brass and copper strips.

BIRDSBORO BUILDS A CONTINUOUS HOT STRIP MILL . . .

In the new, modern plant of the West Leechburg Steel Company, West Leechburg, Penna., operates a most complete, continuous hot strip mill . . . From cold billet in the storage yard to the finished coiled or bundled strip—Birdsboro equipment serves each step of its manufacture . . . And, numbering among Birdsboro design and construction are:

Billet conveyor tables
Pinch Rolls
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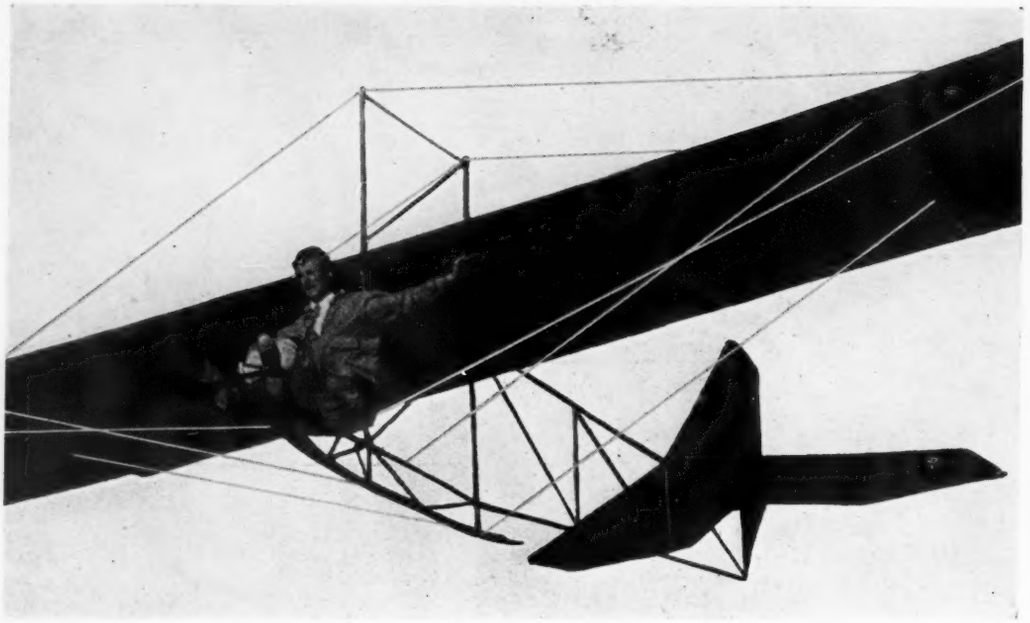
5—12" Mills
3—Edgers
Stationary twist guides
Rope transfer and tables
All pinion stands and drives
Flying shear approach table
Flying shear (improved type)
Flying shear delivery table
Strip piler
Guides
Vibrator
Coiler and equipment

BIRDSBORO
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA



DESIGNERS and fabricators increasingly are favoring the use of steel tubing for glider fuselage construction, as well as for other parts of these light craft

Gliders Make Extensive Use of Steel Construction

BY JOHN F. HARDECKER

STEEL is rapidly coming into general use as a construction material for aviation's latest interest, the glider. While wood generally was the material used in the earlier gliders, increased demand for these motorless aircraft is turning the industry to mass production considerations, and steel is gaining wide favor with both designers and fabricators.

Perhaps the greatest application in the growing utilization of steel for glider fuselage construction is in the form of tubing. Steel wing ribs are common and, of course, innumerable steel fittings are essential, even on wooden gliders. Steel wire is used practically universally for bracing wings and operating controls, and enters into such parts as bolts, nuts, towing and launching fittings, etc.

All-Steel Glider

A popular glider, known as an all-steel type, makes generous use of Aerotruss steel ribs, described in the Feb. 13, 1930, issue of *Iron Trade Review*, predecessor of STEEL. These ribs are slipped over the wing spars and screwed into place. The wing is attached to the fuselage by steel fittings fastened to the body of the glider. The fuselage comes in two sections and is bolted together with two steel bolts. It is made of aircraft steel tubing assembled by welding at the builder's plant. The steel stick control, rudder bar, brackets, and fittings are already assembled and welded in place.

The tail assembly, including the fin, stabilizer, rudder and flippers, is also made of Aerotruss steel ribs, welded to steel tubing, making a strong, light empennage. The entire glider may be put together in a short time and requires only a hammer, screw driver and wrench to assemble. An advantage of the steel construction of this type of glider is the ease with which it may be dismantled for transportation or storage. The wing is designed in two sections, quickly and easily assembled by bolts. The center section, fuselage and tail assembly can be put together in two minutes time, and a short additional time is required to attach the stabilizer, flipper, fin and rudder. The standard steel construction used throughout allows immediate part replacement at low cost.

Reinforced steel tubing gliders, of the two-place dual-control type for instructor and passenger, are designed especially to withstand the abuse and hard wear to which these craft are subjected when in the hands of inexperienced pilots. The entire fuselage is constructed of steel tubing welded at all joints and with balsa wood inside the tubing as a positive insurance against any bending of the tubing. This novel type of fuselage is claimed to reduce accident hazards caused by weakening of parts, lessen repairs, increase rigidity and withstand severe shocks.

These two-place gliders, although constructed of steel, weigh less than gliders of wooden construction. The use of steel tubular struts for wing bracing instead of the customary wires, eliminates the necessity for readjustment after each flight. Each glider is equipped with an absolute positive steel trip release, suitable for launching from either automobile or shock cord. The reinforced steel prow of the main skid is so designed as to protect the pilot from striking the ground in the event of a headlong collision.

Lightness with Strength

A peculiarly light but strong construction is found in a third type of glider, a single-seat design, in which is followed the airplane practice of using tubular steel for the fuselage structure. The lightness and strength materially assist the flying qualities and life of the glider which by virtue of its steel construction combines lightness and strength and compromises on neither score. The resultant fuselage is claimed to be ideal for the distribution and absorption of heavy abnormal stresses caused by bad landings.

Wings are of conventional two-spar spruce construction, equipped with steel wing tip skids which protect the wings on takeoffs or landings. The adjustable seat for the pilot is of strip steel; controls are of steel wire operating on pulleys. Roll shock obsorbers cushion the steel structure of the fuselage from the wooden skid while at the prow of the main skid is a novel steel trip-catch release suitable for the launching of the glider by either the towing or catapult methods.

A fourth type of glider now being

manufactured employs a fuselage fabricated in three replaceable sections of aircraft steel tubing. The fuselage skid is an elongated elliptical form diagonally braced. The wooden landing shoe is fastened to the bottom runner by means of steel clips. Wings are made of spruce, internally braced with hard steel wire and make use of a new type of wing skid of tubular steel fastened by a tripod arrangement to each wing. The skid proper is held in position by a rubber shock cord that gives as the weight depresses it and tends to equalize the wings, as well as prevent any damage. Steel control cables are located outside the wings, where they maybe inspected readily. A new positive type metal towing hook which is foulproof is available on the nose of the fuselage; a launching hook for shock cord underneath the towing hook performs the same function when launching by the cord method.

A number of types of steel are in use for fittings, wire, tubing, and miscellaneous glider parts. Fittings are usually drop forged parts and S. A. E. 1035 steel, a medium-carbon analysis with ultimate strength of about 80,000 pounds per square inch, is used widely.

Alloy Steels Used

Chrome-vanadium steels 6130 and 6135 in the form of sheets and bars, respectively, have been used to some extent for aircraft parts but are becoming obsolete due to the fact that they do not draw well into the lighter sizes of seamless tubing. A 3½ per cent nickel steel, S. A. E. 2330, with ultimate strength of 125,000 pounds per square inch, later was adapted to bars and tubing, subsequently giving way to chrome-molybdenum steel tubing which not only draws and fabricates well but has exceptionally good welding qualities, both as regards strength and soundness.

One of the principal reasons for the adoption of chrome-molybdenum steel was the excellence of its physical properties after welding and without subsequent heat treatment, an ultimate strength of 95,000 pounds per square inch, yield point of 60,000 pounds per square inch and elongation in 2 inches of 12 per cent being obtainable values. When normalized by heating to any temperature between 1500 and 1600 degrees Fahr. and allowed to cool with free circulation of air, the ultimate strength is raised to 100,000, the yield point to 80,000 and the elongation to 15 per cent. After being heat treated by quenching in oil from 1600 degrees Fahr. and tempering, it is possible to increase these values in sheet or tubing up to ¼-inch thickness to as high as 200,000 pounds per square inch ultimate strength and 150,000 pounds per square inch yield point. Approximate analysis of the chrome-molybdenum steel in per cents is as follows: Carbon 0.30; manganese 0.50; phosphorus maximum 0.04; sulphur maximum 0.045; chromium 0.95; and molybdenum 0.20.

The very fact that even the all-steel glider has some wood in it is an assurance that the preponderant use of steel in gliders is a matter of engineering choice and not the result of a mere whim to build an all-metal craft. The reinforced steel tubing glider is a recent development of what was originally an all-wood glider, and many other glider designs are now developing the steel fuselage and steel wing rib applications.

It is also important to observe that the steel rib, one of the latest developments for airplanes, is finding a growing application in gliders. In fact the rapid expansion in production of gliders may well be the means of establishing the steel rib, as it is not unreasonable to assume that demands for these specialized products for gliders may soon exceed those of the powered airplane.

The fact that steel, long admitted practical as a material for large planes, but seriously questioned as a material for small planes due to the minimum thickness of fabrication and other limitations of aircraft construction, is finding such an extensive use in gliders may well presage the more general use of steel in all types of aircraft from the smallest to the largest.

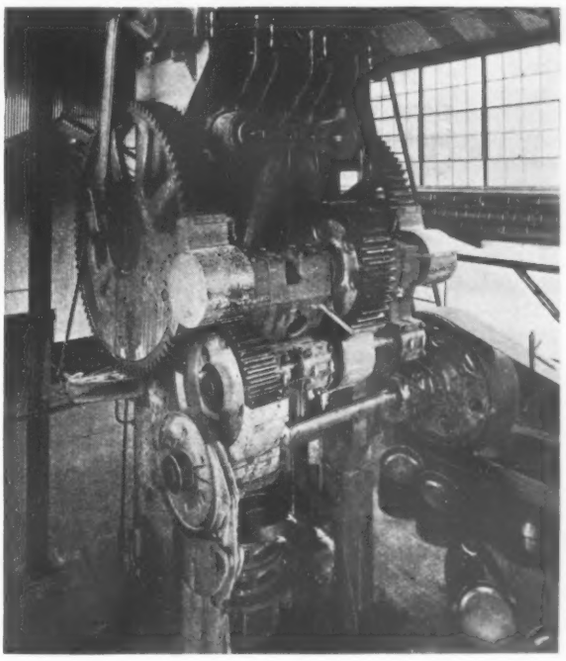
Deep-Drawing Press Forms One-Piece Containers from Chrome-Nickel Steel

WHAT is claimed to be the largest deep-drawing press in this country recently has been installed in the Long Island City, N. Y., plant of Lalance & Grosjean Mfg. Co. The press, shown in the accompanying illustration, was built by Toledo Machine & Tool Co., Toledo, O., and was designed especially for the drawing of deep shapes, in particular, one-piece 40-quart milk cans from chrome-nickel steel sheets.

A pressure of 1200 tons is developed by the ram, stroke of which is 45 inches. Height of the press is 35 feet; width 17 feet 8 inches; and weight 220 tons. Each of the two large cogs is 10 feet in diameter and weighs 10 tons. Power is furnished by a 150-horsepower motor.

The press is capable of drawing a container as large as 24 inches in diameter from 10-gage chrome-nickel steel, while from 14-gage stock a rectangular shape up to 50 by 40 inches and 16 inches deep can be drawn. The one-piece 40-quart milk can, on which production is to be started immediately, has an outside height of 24⅜ inches and an outside bottom diameter of 13 inches.

The company has been making one-piece 20-quart cans of chrome-nickel steel for some months; these are in use in the fruit juice, chemical and beverage industries. However, the manufacture of the same can in the 40-quart size, for the milk industry, has been awaiting construction and installation of the new deep-drawing forming press.



DEEP-DRAWING press forming 40-quart milk containers from chrome-nickel steel. The press develops a pressure of 1200 tons and itself weighs 220 tons

Forms 100 feet of 30" pipe per minute

THE GIANTS OF PIPE MACHINERY

Sizes and straightens 100 feet of 36" pipe per minute

The forming mill is equipped with steel housings — hardened and ground rolls — roller bearings. It has a capacity for forming pipe from 16 to 30 inches inclusive with wall thickness up to 3/4 inch. Produces seams suitable for welding.

The sizing and straightening mill is a nine stand unit for pipe ranging from 16 to 36 inches inclusive and in any length. It is equipped with anti-friction bearing throughout. All rolls are brought to contour by micrometer adjustment.

These mills are backed by over twenty years experience in developing Cold Roll Forming Machines. Our pipe equipment handles all sizes from 1/8 inch to 36 inches diameter, and wall thickness from tin plate to 3/4 inch.

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Gear Performance Reflects Accuracy of Design

A 2-degree rise in room temperature causes a 10-degree rise in a worm gear case. This interesting fact was revealed by the worm gear committee presenting its report before the annual meeting of the American Gear Manufacturers' association in Buffalo, May 7-9.

Describing test on worm gears, W. H. Himes, Nuttall works, Westinghouse Electric & Mfg. Co., Pittsburgh, chairman of the committee, explained that the condition probably is caused by the effect of the increased temperature on the lubricant. Deflection of a worm gear, according to Mr. Himes, also is an important factor in performance. If bearings are set closer together a great deal of deflection can be eliminated, thus providing more satisfactory operation under increased horsepower.

Gears Studied Photoelastically

A photoelastic study of contact stresses in gears conducted by R. V. Baud, Westinghouse Electric & Mfg. Co., East Pittsburgh, revealed that as the driving pinion rotates, the contact stresses decrease and the fillet stresses increase. This tendency to converge, therefore, is a maximum at the point of disengagement, the stress ratio being a function of the load.

The speaker emphasized that the load of 20,210 pounds per inch face used in the test is far in excess of the loads commonly used in practice. The research is of a preliminary nature, but the results will be useful as a guide for further work, particularly in that the ratio between the loads must equal the ratio of the modulii of elasticity to give correct results for steel gears.

Errors on gear tooth profiles together with the deformation under load cause the masses on the driving and driven shafts to change their velocities slightly, Prof. Earle Buckingham, Massachusetts Institute of Technology, Cambridge, Mass., set forth in discussing "Strength and Durability of Spur Gear Teeth." This change in momentum and velocity tends to cause the tooth surfaces to separate, which is resisted by the applied load. After separation the surfaces of the teeth come together again with an impact. The additional or increment load set up by this impact depends primarily upon the amount of change of momentum in the revolving masses caused by the effective errors in the tooth profiles.

On metal gears, where the effective error is primarily the initial error in the gear tooth profiles and the deformation under load is but a small part of the effective error, this increment load will not be directly proportional to the applied load but will be almost independent of it. With nonmetallic gears, on the other hand, where the largest part of the effective error is the deformation under load, this increment load may be very nearly proportional to the applied load, Prof. Buckingham asserted.

The type of service under which gears operate is one of the principal factors in determining load capacity, according to F. E. McMullen, Gleason Works, Rochester, N. Y., who reported on the method for computing allowable tooth loads and stresses in bevel and spiral gears. It is essential, therefore, to know if the maximum load is to be continuous, probability of shock, duration of overloads and method of lubrication. Although accepted as recommended practice, Mr. McMullen's report is to be supplemented with additional data covering lubrication, types of mountings, etc.

Nonmetallic gears introduced between steel gears offers the nearest approach to noiselessness, and on this premise, C. W. Mansur, plastic department, General Electric Co., Schenectady, N. Y., discussed nonmetallic gears and their characteristics. The tooth face of this type of gear being somewhat compressible and elastic conforms readily to the tooth face of the metal mating gear.

Nonmetallic Gears Are Molded

Materials used for nonmetallic gears include wood, rawhide, fiber, rubber, cotton and other vegetable fibers. Most of the first nonmetallic automobile timing gears were made by turning or machining a solid piece of material, and this prompted design of the die formed gear which is a molded blank with a thin web but a rim of the width required for the companion gears. The web thickness frequently is only one-fifth of the rim thickness. Metal hubs can be molded into the center of these gears.

All types of nonmetallic gears must be aligned properly, Mr. Mansur declared, there being many installations in which improper fastening of the motor to the machine frame causes short gear life and failure. Slight inaccuracies will be compensated for by the relative flexibility of the tooth,

(*Concluded on Page* 50)

Manufacturers of Gears Considering Commercial Aspects of Business

IN ADDITION to their engineering duties, technical experts in the gear manufacturing industry are displaying a deep interest in the commercial side of the business. Indicative of this were activities of the annual convention of the American Gear Manufacturers' association in Buffalo, May 7-9. Previous meetings of the association have been devoted almost entirely to technical subjects, this year's program, however, was nearly equally divided between the engineering and commercial phases.

While closer scrutiny of business methods is to be expected in view of prevailing conditions, President B. F. Waterman asserted that more attention in the future will be given to commercial problems of the industry. Committees working on standardization have made good progress and with this program well under way, more time undoubtedly will be directed to such subjects as cost accounting and price building.

The position of gear manufacturers is particularly fortunate, according to President Waterman, who recently completed a tour to a number of industrial plants. Reporting impressions of this trip, he expressed surprice that so many antiquated machines still are in operation, machines which should be scrapped. In selling new equipment to these plants, however, machine tool builders are confronted with demands for trading in the old. Gear makers, fortunately, do not have to contend with used or second-hand gears in selling their product.

"Would it not be a sensible investment on the part of the association to spend a considerable amount of time and study of a uniform cost system?" E. S. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati, asked the meeting.

Mr. Sawtelle advocated use of the same fundamental basis throughout the industry and contended that there is not enough difference in rates for raw materials, rates of pay, overhead and administrative expense to make

prices discordant. Gear manufacturers cannot afford to complicate errors by introducing still further errors of entirely different systems of calculations and prorating expense, he maintained.

Methods of building the sale price of a gear were discussed at length. D. W. Mort, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh, stated that his company's plan involves the budgeting of costs of factory operations (direct labor and burden) at varying loads of production, ranging from extremely low to extraordinarily high volume, the result of which is a sliding scale budget for each of these elements on the total output for a given period.

Charges Are Explained

W. F. Weeks, Boston Gear Works Inc., Norfolk Downs, Mass., pointed out that in his company's setup special tools are not charged to any particular lot or group of orders. They are considered a burden element. The carrying charge on the finished gear inventory, and the fact that items are sold one or a few at a time, even though made in quantities, must be considered when pricing.

In outlining the proposed revision of the recommended practice uniform proposal sheet, J. Harper Jackson, Pittsburgh Gear & Machine Co., Pittsburgh, advised that an investigation of trade customs of allied industries, such as steel castings, drop forgings, iron castings, etc., reveals a decided trend toward the elimination of cash discounts. The committee, of which he is chairman, felt that the gear manufacturers should fall in line with this trend.

Present officers of the association were re-elected. They are as follows: President, B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I.; first vice president, E. W. Miller, Fellows Gear Shaper Co., Springfield, Vt.; second vice president, John Christensen, Cincinnati Gear Co., Cincinnati; treasurer, Warren G. Jones, W. A. Jones Foundry & Machine Co., Chicago.

B. F. Waterman

Re-elected president of the American Gear Manufacturers' association at the annual meeting of that group.

The board of directors consists of F. B. Drake, Johnson Gear Co., Berkeley, Calif.; E. S. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati; E. W. Miller, Fellows Gear Shaper Co., Springfield, Vt., and P. L. Tenney, Muncie Products division, General Motors Corp., Muncie, Ind.

The association's fall meeting will be held in Pittsburgh some time during the first two weeks of October, it was announced.

Gear Makers Considering Commercial Aspects

(*Concluded from Page* 49)

just as unavoidable inaccuracies in cutting are cared for.

Standardization work of the American Gear Manufacturers association has proceeded actively since the last meeting. A. A. Ross, General Electric Co., West Lynn, Mass., chairman of the general standardization committee, reported that revision of the program has provided an up-to-date guide with cross reference index showing what has been accomplished, and dates of adoptions and revisions.

The report of the inspection committee dealing with gear inspection methods and containing some clarifying information, was adopted as recommended practice. A report of gearing nomenclature, regarded as a notable accomplishment, also was adopted as recommended practice. Some discussion arose as to the use and importance of Greek letters as symbols, but it was pointed out by the committee that the symbols designating gear tooth elements and angles had been allotted according to a definite plan and that only those formulas likely to be used in engineering and sales correspondence had been retained. In order to apply these to typewriter, A. G. M. A. standard abbreviations had been used instead of symbols.

Adopt Keyway Revisions

A proposed revision of the keyway committee to its present recommended practice, increasing shaft diameters from 13 to 21 inches with keys and keyways for the same, was adopted. The tooth form committee reported on tip relief, advising that a questionnaire revealed so much variation in opinion on the subject that some time will be required to prepare a recommendation for standard practice. That some form of tip relief is necessary was agreed.

Announces Papers for Pittsburgh Meeting

A well-balanced program has been prepared for the twenty-second annual convention of the American Steel and Heavy Hardware association to be held in the William Penn hotel, Pittsburgh, May 18-20. General discussion scheduled for Monday afternoon will center around management and the cost of doing business. The first session Tuesday will deal with problems relating to iron and steel, structural steel, sheets and plates; the afternoon session will be devoted to the consideration of cutting schedules, quantity extras and problems of the cold-finished steel industry. The closing session Wednesday morning will be a business meeting. Papers scheduled for presentation include:

Morning, May 18

"What Manufacturers Are Doing to Reduce Expenses and Improve Service," by G. S. Case, president, Lamson & Sessions Co., Cleveland.

Afternoon, May 18

"Business for Profit," by Dr. F. M. Surface, assistant director, bureau of foreign and domestic commerce, Washington.

Seek Simplification in Heating Boiler Field

A survey of a variety of low-pressure steel heating boilers, conducted recently by the division of simplified practice, bureau of standards, Washington, revealed some interesting statistics which will be used as a basis for development of a simplified practice recommendation. Twenty-one manufacturers, representing over 90 per cent of the 1930 output, reported total shipments of 7805 boilers of which over 76 per cent were of the welded combination type. Of the total shipments, 3036 units were to be mechanically fired.

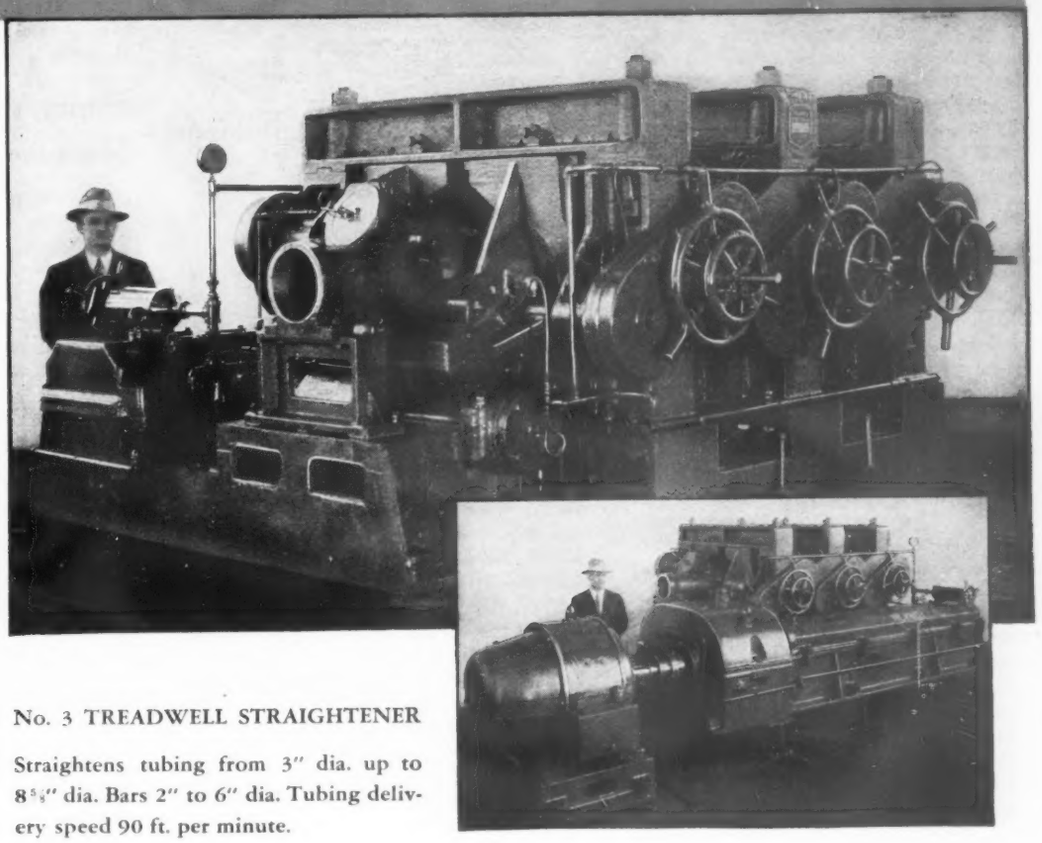
Eighteen different kinds of boilers were reported, each made in from 6 to 132 different capacity ratings. The total variety aggregated 1072. An analysis of the two most popular kinds of boilers showed that over 84 per cent of the sales were made in 20 per cent of the capacities produced, and that no shipments were made in over 28 per cent of the capacities produced.

The detailed report is in the hands of the simplified practice committee of the industry and will be used in formulating a recommendation on the capacities of low-pressure steel heating boilers, in an attempt to eliminate waste prevalent in the field.

AGAIN

they buy a Treadwell Straightener

(ABRAMSEN DESIGN)



No. 3 TREADWELL STRAIGHTENER

Straightens tubing from 3" dia. up to 8⅝" dia. Bars 2" to 6" dia. Tubing delivery speed 90 ft. per minute.

A TREADWELL STRAIGHTENER was installed in this large tube mill over one year ago. The No. 3 Treadwell Straightener illustrated was recently installed in this same mill—its selection being based on the proven ability of the Treadwell machine to increase straightening efficiency and lower maintenance costs.

The improved Treadwell straightening principle is perhaps best suited for your own straightening requirements. This can be quickly determined by a working demonstration. We will gladly arrange one by sending a small working model to your plant.

BETTER GRADE MACHINERY

Treadwell Engineering Company

Easton, Pa.

Rolling Mills—Threading & Cutting-Off Machinery—Special Machinery—Iron & Steel Castings

Effects Economics in Heavy Castings Production

(*Concluded from Page* 37)

ation. Some of these set-ups require several hours at each machine, during which time the machine is not in production. At Eddystone a single set-up for each casting is made, independent of any particular machine, and as a result the costly machine tools there may be engaged continuously on high pressure machine work for which they were installed and without loss of time for set-ups. The machine shop is equipped with unusually heavy units.

Oil is used for melting in the open hearth furnaces, for drying cores and molds and as fuel in the annealing ovens and in locomotive fireboxes. Stored in an underground tank holding 500,000 gallons, it is carried by underground pipe lines to the various consuming stations.

Auxiliary departments of the plant include a building for generating acetylene and storing oxygen and acetylene; a maintenance machine shop; a large cafeteria; a dispensary; and administration and office quarters.

Photographs Point Way to Building Business

Eastman Kodak Co., Rochester, N. Y., is launching a series of brochures in which outstanding examples of applied photography are reproduced, focusing attention by means of striking photographs on unusual phases of marketing and production. The folio is replete with business building ideas and is available monthly at a cost of 50 cents per issue, six consecutive issues for $1.50. Unique reproductions of photographs used by manufacturers of tractors, metals, motor trucks, protective coatings, railway equipment, musical instruments, tools, insulation, anesthetics, and arc welding apparatus are included in the first issue.

Metal Distributors To Meet in Pittsburgh

New applications of sheet metal and problems of distribution will be discussed at the opening session of the twentieth annual meeting of the National Association of Sheet Metal Distributors to be held in the William Penn hotel, Pittsburgh, May 20-21. The Wednesday afternoon session will be devoted to discussion of simplified practice, quantity differentials, the sheet copper situation, and overhead expenses and business conditions. The morning session Thursday will deal with the middleman's service, eave trough and conductor pipe situation and association business. Papers to be presented include:

Morning, May 20

"Co-operation Between Distributors and Sheet Metal Contractors," by W. C. Markle, secretary, National Association of Sheet Metal Contractors, Pittsburgh.

"What New Lines Can Be Handled by the Distributor Selling the Sheet Metal Contractor," by W. S. Doxsey, editor, *Daily Metal Trade*, Cleveland.

"The Promotion and Use of Sheet Metals," by S. A. Knisely, director of advertising and publicity, Sheet Steel Extension committee, Cleveland.

Afternoon, May 20

"Consideration of Problems in the Distribution of Sheet Steel," by F. J. McNeive, chairman, sheet steel committee, W. F. Potts Son & Co., Philadelphia.

Modern Foundry Equipment Exhibited at Show

(*Concluded from Page* 40)

lumber and a wide range of foundry specialties were arranged to attract the interest of visiting foundrymen.

Metallographic equipment and commercial X-ray units were featured by several exhibitors. Safety clothing and equipment, safety shoes with steel inserts, valves, door mechanisms, core transports, bag holder trucks, chipping hammers, annealing pots, and plates and tools, give some idea of the great diversity of miscellaneous equipment on display.

Graphite crucibles, refractories, brick, tile, refractory cements, and clays for bonding and rebonding molding sand were exhibited prominently. Both graphite and fireclay refractories, in standard and special shapes, were in evidence.

An interesting exhibit was that of various samples of sand, collected from the United States, Canada and foreign countries during the past 30 years. Other exhibitors displayed numerous varieties of core sands and molding sands. A variety of core binders, including linseed oil, linseed oil base, dry binders and compounds, were shown by a number of companies. In the same classification were plumbago blacking, core ash, parting compounds and facings.

New Process Refines Blast Furnace Slag

Plans are being prepared for a new plant, in connection with the St. Louis Gas & Coke Corp., Granite City, Ill., for the manufacture of a light-weight aggregate, known as Waylite. The company, which will operate the plant in St. Louis, probably will be known as the Waylite Aggregate Co.

The process is a German invention with patent registered in this country for refining blast furnace slag, rendering it nearly white in color, hard, light, cellular, and removing sulphur and other impurities. The product, which essentially is stone full of innumerable cells, floats on water. Included in its uses is the encasement or insulation of steel in large buildings.

The product is crushed, screened and graded into aggregate of different sizes, the finest being used for sand and the coarser particles for aggregate, and the whole, when mixed with portland cement, makes a concrete of any strength desired. Concrete for insulating purposes made of this material weighs about 75 pounds per cubic foot.

Employs Steel Trays for Shipping Electrotypes

The advertising department of the American Sheet & Tin Plate Co., Pittsburgh, has developed a rather unique idea in the way of a shipping package designed to secure the safe delivery of electrotypes to publishers, without the all-too-frequent damage and abrasions received in the mails. This company now is using sheet steel boxes or trays, without lids, for shipping advertising electros. These trays are made of light-gage black steel sheets, spot welded at the corners and are produced by the Gem Mfg. Co., North Side, Pittsburgh, at a price less than formerly was paid for wooden shipping packages.

In shipping electrotypes in these steel containers, the plates are placed face down upon a folded newspaper, or a layer of blotter or soft paper. The trays are large enough to allow for variation in sizes of plates, and the extra space between electrotype and the sides is filled with packing material, usually old newspapers. The package is then wrapped and addressed in the usual manner.

The weight of the steel tray, 15½ ounces, is but 3 ounces more than the light-weight wooden box formerly used, and adds practically nothing to the parcel post charges of the average electrotype. The customary wooden box for single plates usually weighs 37 ounces with the lid and 22 ounces without.

This type of packing using steel trays was approved by post office authorities before being adopted.

Metal Door Sales Traced

Reports to the department of commerce by 148 manufacturers of metal doors, shutters and window sash and frames show that 85 per cent of their output is sold to industrial users, largely building contractors, 12.4 per cent to manufacturers' own wholesale branches and other wholesalers and 2.6 per cent to retailers.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Decarburization

The surface decarburization of steel at heat treating temperatures, by W. E. Jominy, bulletin 18 of the department of engineering research, University of Michigan, Ann Arbor, Mich., 51 pp., 7 illusts., 34 tables.

A large number of factors influence the surface decarburization of steel at heat treating temperatures. Of these the most important are the furnace atmospheres, the pressures, temperatures, the periods of exposure, and the scale on the steel. In order to make any predictions regarding the decarburizing action the effect of the individual gases which may be present in the furnace atmospheres must be considered in relation to one another.

It is often possible to use sufficiently short periods of exposure so as to minimize the decarburizing effects. These effects obtain in most steels although steels of certain composition may decarburized more rapidly than others.

—STEEL, 5-14-31

Nitriding Process

History and present development of the nitriding process, in Vancoram Review, April 1931, p. 47, 3½ pp., no illusts.

Although earlier discoveries leading to present knowledge of the nitriding process were made as long ago as 1807, it was not until 1920 that Fry studied the problem thoroughly, later commercially developing steels which could be surface hardened by alloying with nitrogen, thus establishing a milestone in metallurgical progfess.

Nitrided steels possess certain distinct advantages over steels case hardened by the carburizing process, including greater surface hardness and wear resistance; resistance to certain types of corrosion; much less distortion and growth; no heat treatment required after exposure to ammonia; and practically complete retention of hardness after reheating up to at least 1200 degrees Fahr.

Chief disadvantages of the process have been high cost of nitriding steels; poor transverse properties of aluminum steels; greater time required for nitriding; difficulties in developing adequate toughness or ductility in the extremely hard case; and difficulties in retaining in the original steels a core hardness sufficient to support the thin case under severe load or impact.

—STEEL, 5-14-31

Structural Welding

Present status and future chances, by J. E. Ferguson, in Metal Progress, May 1931, p. 51, 7 pp., 5 illusts.

Since original experiments with welding structural members made 10 years ago the process has proved its value in many applications which have stood tests of time and service. As with riveting, careful design, operation and inspection of welded structural work are required to make the finished structure what it should be and inspire confidence in the more rapid development of the welding method.

Important factors determining the promotion of the welding process have to do with the proper fabrication and erection of future structures, involving several items such as the use of correct sections, logical designs for the particular use, suitable details for welding, correct plant layout in the fabrication shop and field, proper welding equipment, proper supervisory organization and welding operators, and proper inspection.

—STEEL, 5-14-31

Wire Rope

Manufacture of wire rope and factors of design, operation and upkeep which materially affect costs, discussed by A. J. Morgan, in Mining Congress Journal, March 1931, p. 155, 5½ pp., 11 illusts.

A rope hoisting larger tonnage from lower levels will show reduced service over one hoisting its tonnage to higher levels. Rope worn to the same extent can be assumed safely to have performed the same amount of work. The drum preferably should be grooved and the pitch of the groove not too small for the new rope. It also is desirable that the hole through the drum be arranged so that a radius is given the rope rather than a short, sharp breakover on the face. Worn flanges on a drum materially influence the winding of the rope and consequently the abuse to the rope. Sheaves and rollers, which are too small, greatly add to rope abuse, not only by additional bending but also by aditional abrasion produced.

—STEEL, 5-14-31

Buying Coal

Purchase of fuel for plant operation, discussed by G. B. Gould, in Power, April 28, 1931, p. 663, 3 pp.

Plant builders and purchasers should watch carefully the coal-buying limitations that are built into a plant. These are not generally due to the inherent characteristics of the type of coal-burning equipment used, but to undersized or other improper application. In three previously published articles the author pointed out that the easily obtained difference of 50 cents per ton in coal price (for a given heat value) will have a greater effect on the cost of steam than a 10 per cent difference in efficiency. The problem is to design plants for coal buving freedom as well as thermal efficiency, and to select coal to take maximum advantage of the possibilities.

—STEEL, 5-14-31

Ladle Design

Analysis of items pertaining to appropriate maintenance and reliability of the modern ladle for handling steel, discussed by J. H. Hruska, in Blast Furnace and Steel Plant, May 1931, p. 673, 4¾ pp., 4 illusts., 4 tables.

At present many ingot producing steelworks prefer ladle brick of a refractoriness around cone 30. These brick not only warrant a more desirable resistance toward thermochemical corrosion and somewhat lower heat losses per unit of time, but disclose a markedly higher number of heats or melts per lining. Moreover, this type provides an easier estimate number of courses when judging the residual contents of molten metal, less difficulties in removing skulls, etc. The significant strife launched in recent years against the cause of nonmetallic inclusions in ferrous matter brought closer attention to nozzles and stopper heads. Both parts are affected by erosion under pressure and under high temperatures, thermochemical attacks of the molten steel, etc.

—STEEL, 5-14-31

The ARMINGTON GIANT *is in each of these Cranes*

Heavy duty Electric Traveling Cranes for mill and foundry service.

High speed cranes for various uses.

Slow speed cranes for power house duty.

Hand cranes—Jib cranes—special cranes.

Armington ruggedness and quality is built into each of these cranes—clean cut accessible design—extra liberal factors of safety—precision of workmanship. You will appreciate these features in your next crane if it is an Armington.

Manufacturers of
TRAVELING CRANES—WALL CRANES
JIB CRANES—SPECIAL CRANES

The **ARMINGTON ENGINEERING** *Co.*
Euclid, Ohio

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Instrument Tubing Gives Heat Compensation

Taylor Instrument Companies, Rochester, N. Y., announce a new type of capillary tubing for use in connection with temperature measuring and recording instruments of the mercury actuated type. A feature of this new tubing is that compensating qualities have been incorporated into the material of its construction so that inequalities of external temperature surrounding the tubing do not affect the accuracy of the connected instruments.

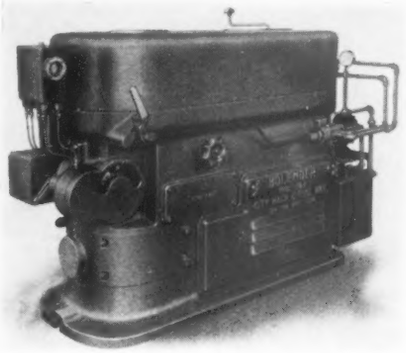
It is pointed out that new methods have had to be developed for producing this steel tubing and that the material, physical properties, accuracy of bore, etc., are controlled within extremely close limits. Volume of mercury in the tube is so proportioned to its co-efficient of expansion and to the size of the alloy steel wire used, that any change in its volume, resulting from external temperature changes, is accurately compensated.

For this reason the adjustment is made for each varying exposure and it is unnecessary to compensate the instrument for the average external condition along the line of the tubing, an adjustment which is difficult if not impossible to make satisfactorily. To insure maximum accuracy, welded joints are employed and a bulb of machined alloy steel is used.

Machine Corrugates Drums by Expanding Method

E. W. Bliss Co., Fifty-third street and Second avenue, Brooklyn, N. Y., recently has developed a machine for corrugating and flanging large steel drum bodies. It is of the expanding jaw type, having both inner and outer expanding members, two operations being required to complete each drum body. The accompanying illustration shows this machine in action.

The procedure is to insert the drum bodies one end at a time, into the die, upon which the operator presses a foot treadle, causing the inner jaws to expand and the outer jaws to contract upon the work, progressively. Flanging occurs first, the first section bead follows next, then the second section bead and so on until corrugation of half of the drum body is accomplished. Then the inner jaws collapse and the outer jaws expand, allowing the operator to remove and reverse the work, the cycle of operations then being repeated on the other half.



Hydraulic gear burnisher built by City Machine & Tool Works

Wall Thickness Unaffected

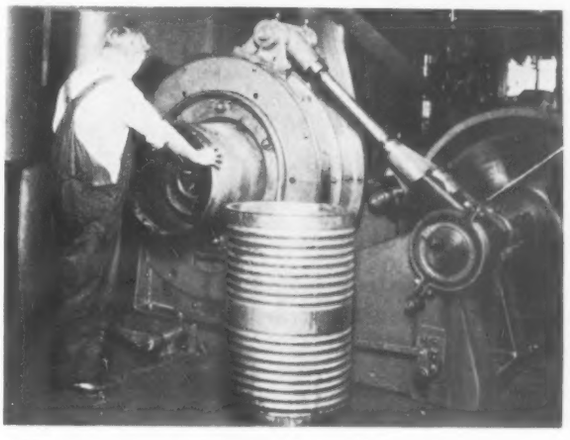
The builder points out that this expanding method of corrugating does not affect wall thickness of the material of the drum body, nor does it tend to rupture or open up locked side seams. Also, this method effectively serves to resize the ends of the drum, which insures proper fit of the tops, facilitating double seaming. It also is asserted that corrugations produced by the expanding method increase collapsing resistance of the drums from 10 to 20 times over drums with plain walls, thereby allowing safe use of lighter gage metal.

The machine occupies 9 feet 3 inches x 8 feet of floor space, and has overall height of 8 feet 3 inches. It runs at 750 revolutions per minute and requires 15 horsepower. Net weight is 16,500 pounds.

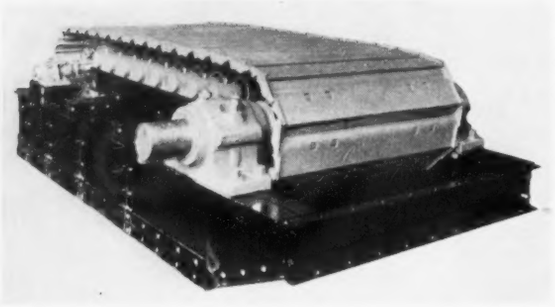
Gear Burnishing Machines Operate Hydraulically

City Machine & Tool Works, East Third at June street, Dayton, O., has adapted hydraulic operation and control to its line of gear burnishing machines. One of these hydraulic machines is shown in the accompanying illustration.

The machine is completely automatic, making it only necessary for the operator to load the gear, throw a hydraulic control lever, and press a single pushbutton. The gear then revolves under hydraulic pressure through a given number of revolutions in one direction, then automatically reverses and revolves an equal number of revolutions in the opposite direction, stopping at the end of this cycle. The operator then unloads the gear, loads in a new one and the cycle is repeated. The number of revolutions given to the gear in either direction can be varied quickly from three to 30. An open faced dial gives constant check on the pressure exerted and a conveniently located control valve permits variation of the burnishing



Machine developed by E. W. Bliss Co. corrugates and flanges large steel drum bodies by expanding method which does not affect wall thickness nor rupture seams



In this nonsagging apron feeder, the Link-Belt Co. has made liberal use of manganese steel to attain necessary strength and abrasive resistance

pressure from zero to the maximum of the hydraulic unit, which is higher than ever actually will be required.

The machine is available for mounting master burnishers either with bronze bearing or roller bearing and has standard capacity up to and including gears of 14-inch outside diameter. This capacity can be increased up to 25 inches outside diameter at slight additional cost. The maker points out that this machine is a complete unit in itself, not dependent on plant air lines, pressure in which is likely to vary throughout the day. The smooth even hydraulic pressure is recommended as giving uniform results.

◆

Multiple-Head Buffer Has Wide Adjustment

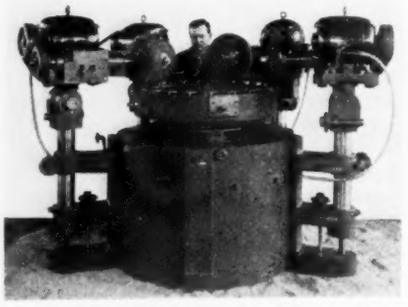
Hammond Machinery Builders Inc., Kalamazoo, Mich., has developed an automatic polishing and buffing machine which can be set up readily to handle these operations on a wide variety of production work. The accompanying illustration shows this machine set up and in operation.

The base of the machine is circular in shape and within it are housed all magnetic motor control switches; also the motor and the Geneva mechanism used in indexing the table. The circular table is supported by a central shaft and by outboard rollers located beneath the cutting points of the wheels. The table is designed to suit the work, various types of fixtures being built into it.

Universal Head Adjustment

Unit motor driven heads are supported by heavy brackets on the side of the base, adjustments being possible in every direction. The main support consists of a heavy bar passing down through the bearings and brackets, and at the top of this bar is a massive hinge giving angular adjustment. The machine shown in the illustration has four heads, but larger machines having six or seven heads can be furnished. These larger machines can be adjusted to turn out as many as 1000 pieces per hour on certain work.

The builder points out that in designing this machine the following characteristics were essential: First proper presentation of work to the face of the polishing wheels; second, maintaining the work in correct position against face of the wheels; third, providing a yielding effect comparable to that given by work held by hands; fourth, giving the work correct speed across the wheel; and fifth, allowing easy redressing the wheel face with abrasive or composition at proper intervals, either manually or automatically.



Automatic polisher and buffer by Hammond Machinery Builders Inc.

Spring suspension of the heads, together with their flexible V-belt drives, give the necessary yielding effect, comparable to that attained in hand grinding.

◆

Heavy-Duty Apron Feeder Resists Abrasive Wear

Link-Belt Co., 910 South Michigan avenue, Chicago, has developed a new design of heavy-duty, manganese steel apron feeder which will handle either abrasive or nonabrasive material ranging from that in lumps of ¼-inch or smaller, up to that in units as large as 6 feet in length. A section of this feeder, mounted on a structural steel base, is shown in the accompanying illustration.

Sprockets, chains, rollers and apron pans are made of cast manganese steel. These pans are of the overlapping, nonsagging type, and range in thickness from ⅜ to 1½ inches, depending upon the service to be performed. They are of ribbed construction. The chains, which are so placed beneath the pans as to give extra support to them, have no small rollers and being well protected their life is long. The broad wearing surfaces of the links form substantial tracks for the large manganese steel rollers which support the load. These rollers are spaced closely, and are mounted on heavy through shafts supported in rugged closed-end bearings.

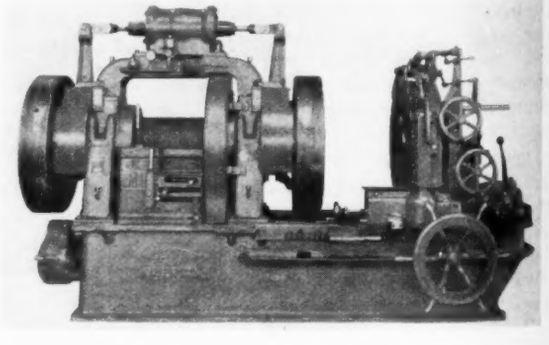
◆

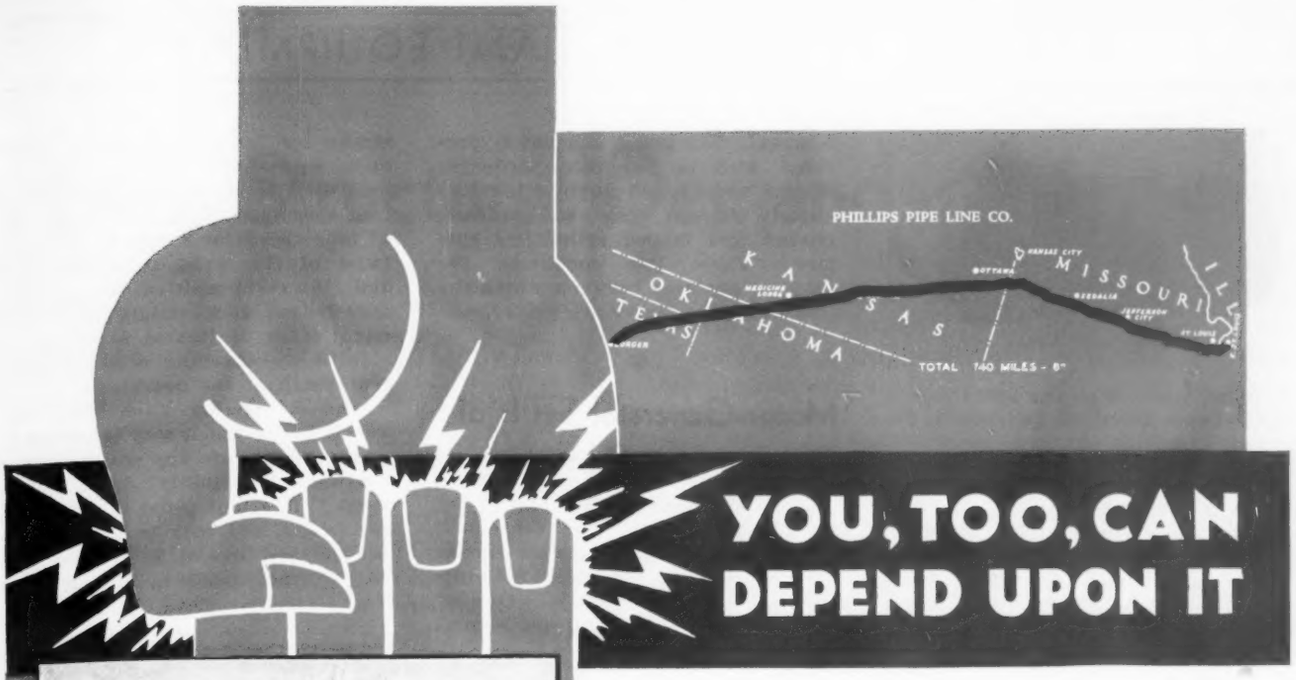
Pipe Threading Machine Has Air Chucks

Landis Machine Co. Inc., Waynesboro, Pa., announces a pipe threading and cutting machine of 8⅝-inch capacity, featuring air-operated chucks. One of these machines is shown in the accompanying illustration.

The operating cylinder is located on top of the headstock, being con-

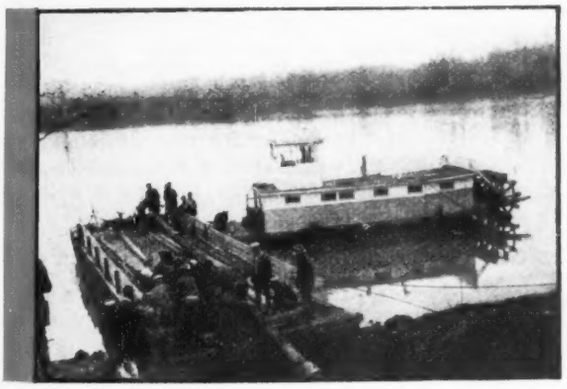
Air chucks have been applied to this large Landis pipe threading and cutting machine to give quick, powerful gripping without taxing the strength of the operator





YOU, TOO, CAN DEPEND UPON IT

At Borger, Texas, the eight inch line of the Phillips Pipe Line Company starts on its journey. It reaches out of Texas, through Oklahoma, Kansas and into Missouri. Near Jefferson City it reaches the bank of the Osage River. Lengths are coupled up, river clamps applied, a tug and barge come into service and before long 900 feet of pipe lies buried in the mud of the river bottom, and the line goes on to St. Louis.

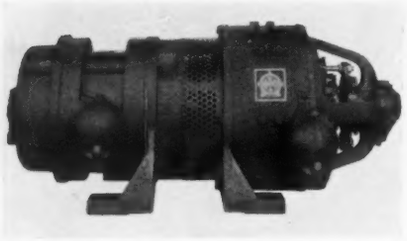


For this out of the ordinary service—an out of the ordinary pipe was used—Republic Electric Weld. Long lengths meant fewer submerged joints. High tensile strength and ductility meant greater ease of handling. Sound structure and uniform thickness meant less danger of damage during progress of the crossing.

The experiences of users of Republic Electric Weld Pipe will guide you to a wise selection of pipe—one upon which you can depend without reservation.

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES: YOUNGSTOWN, OHIO

REPUBLIC
ELECTRIC WELD
PIPE
MADE BY A NEW PROCESS CONTROLLED EXCLUSIVELY BY REPUBLIC STEEL CORPORATION YOUNGSTOWN, OHIO



Compact motor-generator unit designed by Reliance Electric & Engineering Co.

nected to the chuck mechanism through suitable linkage. Without taxing the strength of the operator, this system assures powerful gripping, and at the same time eliminates the possibility of the jaws losing their hold on the pipe during threading or cutting operations.

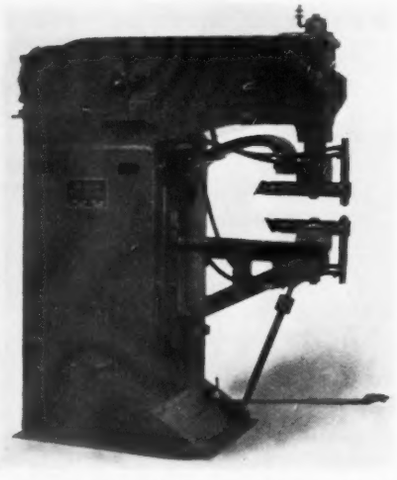
Chuck control is by means of a four-way valve which automatically returns to neutral position when the hand of the operator is removed from the lever.

◆

Angle Plate Operates on Sine Bar Principle

Franz K. Krag, 319 North Albany avenue, Chicago, has placed on the market a sine angle plate to facilitate setting up of work for accurate angle machining. By means of an ingenious combination of the sine and gage block measuring principles, it is possible by means of this plate to set angles with unusual speed and with accuracy to within a few minutes of arc.

The device consists of two elements hinged together so that one may be clamped at any angle in relation to the other between 0 and 45 degrees. The lower element is provided with an accurate hardened, ground and lapped anvil, while the upper element has a hardened ground and lapped cylindrical surface. These two constitute the working surfaces between which the precision gage blocks are placed.



Spot and projection welder built by Federal Machine & Welder Co.

◆

Motor-Generator Set Is of Compact Unit Design

Reliance Electric & Engineering Co., 1042 Ivanhoe road, Cleveland, has developed a new type of single-unit motor-generator set for ratings of 1 to 5 kilowatts. One of these sets is shown in the accompanying illustration.

The set comprises an alternating-current motor and direct-current generator combined into a single unit, thereby requiring only two bearings. The induction motor rotor and direct-current armature are mounted on a single shaft.

This design provides a rugged, compact construction requiring considerably less space than the ordinary two-unit set. Also, the design does away with difficulties of connecting and permanently aligning individual units. These motor-generator sets can be furnished for operation either on two or three-phase circuits of any standard voltage or frequency. They have output ratings of 1 to 5 kilowatts at 125 or 250 volts, and can be furnished either with sleeve-type or ball bearings. Conduit outlets are large to insure ease of wiring.

◆

Resistance Spot Welder Is Convenient To Operate

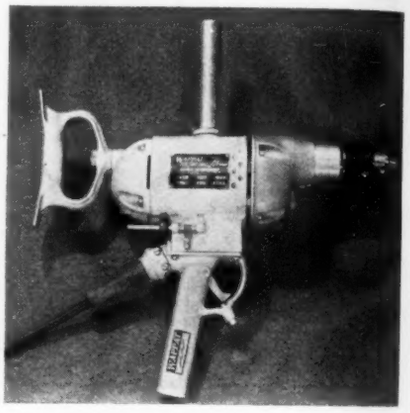
Federal Machine & Welder Co., Dana avenue, Warren, O., has put on the market a new press-type electrical resistance welder for spot and projection welding of sheet metals. This machine, which embodies a number of original features, is shown in the accompanying illustration.

The main housings are of structural steel fabricated by welding, flowing contours having been retained in the new design. The maker points out that this new frame weighs about 1500 pounds less than the older type of cast frame, at the same time having considerably greater strength.

The machine has a variable stroke head which can be given maximum stroke for heavy material, or minimum stroke for light material. A hand dial motor control governs the four-speed motor and gives any one of four speeds or a stop by a simple twist of the wrist in turning the dial. An eight-position rheostat, giving 60 per cent variation in eight equal steps, is located at the lower side of the machine within convenient reach of the operator.

The adjustable knee with universal horns which may be swung to any angle or into any position, gives maximum flexibility in handling work. The foot pedal is adjustable for length and may be swung right or left and locked in position best to suit the operator. The movable upper head, which is controlled by a handlever, allows easy adjusting of points, lifting over projections, etc.

Twelve spot welding speeds ranging from 15 to 130 per minute, are possible.



Production and maintenance electric drill announced by Wappat Inc.

◆

New Electric Drill Is Designed for Balance

Wappat Inc., 7522 Meade street, Pittsburgh, has brought out a new standard duty portable electric drill having ½-inch capacity in steel and 1¾-inch capacity in hard wood. This tool, shown in the accompanying illustration, is recommended both for production work and for maintenance service.

The universal type ventilated motor, which gives spindle speed of 248 revolutions per minute under full load, runs on sealed, deep groove ball bearings. The spindle, fitted with a 3-jaw key chuck, runs on one combination radial and thrust ball bearing and one long bronze sleeve bearing. The tool weighs 14¼ pounds.

Auto, Structural Demands Sustained

More Resistance Shown to Declining Tendency—Operations Off Only One Point — Prices Weaker — April Ingot Output and Unfilled Tonnage Down

SUSTAINED demand for automotive steel and improvement in inquiry for structural material, especially in the Middle West and South, have exerted a powerful braking influence on the decline of activity in the steel industry, holding the deflection in the operating rate this week to 1 point and leaving the industry as a whole operating at 47 per cent.

Sentiment in the industry generally still is that further subsidence in demand and production will develop slowly, and that the market during the summer, while on a low plane, will be fairly steady.

The most disquieting development this week is the more pronounced weakness in prices. Scrap, of barometric significance, has eased off further in many districts, and in Chicago heavy melting steel has broken through the $9 minimum at which consumers as well as producers were determined to hold it. Pig iron prices in the Buffalo district and in eastern Pennsylvania are off 50 cents. Alloy steel is being quoted down $4 a ton. Sheet prices continue irregular, due in part to unsettlement following introduction of new classifications. Cast iron pipe quotations are being shaded. STEEL's composite of 14 leading iron and steel products this week is off 3 cents to $31.37, a new post-war low.

Structural steel inquiry has expanded mainly because of a bulge in the Chicago market, where fabricators expect within 30 days to be figuring on a total of 200,000 tons, in which road and public construction work predominates. In the East the structural outlook is less bright mainly as a result of New York city's decision to forego subway construction 18 to 24 months. Structural steel awards for the week total 18,368 tons, compared with 22,690 tons in the preceding week, and 68,425 tons in the week last year. Twelve thousand tons of concrete bars will be bought by the Pennsylvania railroad for grade crossing elimination at Chicago.

Chevrolet continues as the sustaining element in automotive steel demand, its improvement nullifying diminishing Ford requirements. Present indications are that the May output for the industry will equal that of April, with passenger cars at the peak, but production of trucks continuing to expand.

Releases of track accessories at Chicago have doubled in the week to the best level in more than 60 days. The Wheeling & Lake Erie railroad has come into the market for 200 gondolas, and the board of transportation, New York city, for 300 or more steel subway cars.

Pipe demand has continued fairly active, with the award of 12,000 tons for the Columbia Gas & Electric Co. to National Tube Co., bringing the total for steel pipe orders in the week to 24,185 tons. This follows the booking last week of 41,000 tons of line pipe by the A. O. Smith Corp. for an Electric Bond & Share Co. project, and 9000 tons by National for the Atlantic Refining Co.

Bolt, nut and rivet demand is slightly larger. The market for wire fencing continues fairly strong. Moderately good automotive demand for strip is neutralizing declining needs of the radio industry, going into its usual summer lull. Whether Chicago plate mills book substantial business in tank work for East Texas oil fields depends on adoption of a pro-rating plan.

Steelworks operations in the Cleveland district this week are up 3 points to 59 per cent. Pittsburgh and eastern Pennsylvania each show a loss of 1 point, to 45 and 43, respectively. Chicago is off 2 points to 48 per cent. Operations in the Youngstown district are unchanged at 42, and Birmingham remains at 65 per cent.

The decline in steel ingot production in April was anticipated, a reduction in the month having occurred in each of the past five years, except 1928. Daily output was 104,711 gross tons, 9.04 per cent less than the March average of 115,138 tons. Total production in April was 2,722,479 tons, compared with 2,993,590 tons in March.

Unfilled orders on books of the United States Steel Corp. decreased 97,601 tons last month, more than offsetting the gain of 30,136 tons in March. Total unfilled orders April 30 were 3,897,729 tons, against 3,995,330 a month ago.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (May 13, 1931)	**$31.37**
Last week (May 6, 1931)	**31.40**
One month ago (April, 1931)	**31.59**
Three months ago (February, 1931)	**31.65**
One year ago (May, 1930)	**33.73**
Ten years ago (May, 1921)	**43.32**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	May 13, 1931	April 1931	Feb. 1931	May 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.51	20.76
Basic, valley	17.00	17.00	16.75	18.50
Basic, eastern del. eastern Pa.	17.00	17.25	17.25	18.75
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.01	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	19.00
*Southern No. 2, Birmingham	12.00	13.00	13.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.76	18.26	18.26	20.26
Malleable, valley	17.00	17.00	17.25	19.00
Malleable, Chicago	17.50	17.50	17.50	19.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.38	19.13
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.50	2.50	2.55
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	30.00	30.00	30.00	32.20
Sheet bars, open-hearth, Pitts.	30.00	30.00	30.00	32.20
Billets, open-hearth, Pittsburgh	30.00	30.00	30.00	32.20
Wire rods, Pittsburgh	35.00	36.00	35.00	36.40

	May 13, 1931	April 1931	Feb. 1931	May 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.65	1.65	1.75
Steel bars, Chicago	1.75	1.80	1.70	1.85
Steel bars, Philadelphia	1.94	1.96	1.94	2.04
Iron bars, Chicago	1.80	1.80	1.75	1.90
Shapes, Pittsburgh	1.65	1.65	1.60	1.75
Shapes, Philadelphia	1.76	1.78	1.81	1.76
Shapes, Chicago	1.75	1.80	1.70	1.85
Tank plates, Pittsburgh	1.65	1.65	1.65	1.75
Tank plates, Philadelphia	1.85½	1.85½	1.80½	1.90½
Tank plates, Chicago	1.75	1.80	1.70	1.85
Sheets, blue anl., No. 13, Pitts.	2.00	2.00	2.05	2.15
Sheets, black, No. 24, Pitts.	2.25	2.25	2.35	2.55
Sheets, gal., No. 24, Pittsburgh	2.80	2.85	2.90	3.25
Sheets, black, No. 24, Chicago	2.40	2.45	2.50	2.70
Sheets, blue anl., No. 13, Chicago	2.15	2.20	2.20	2.35
Sheets, galvanized, No. 24, Chi.	2.95	3.00	3.05	3.35
Plain wire, Pittsburgh	2.20	2.20	2.20	2.35
Wire nails, Pittsburgh	1.90	1.90	1.90	2.15
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25
SCRAP				
Heavy melting steel, Pitts.	11.25	12.50	12.75	15.40
Heavy melting steel, eastern Pa.	9.50	10.00	10.50	13.40
Heavy melting steel, Chicago	8.75	9.60	9.85	12.55
No. 1 wrought, eastern Pa.	11.00	11.00	11.00	15.40
No. 1 wrought, Chicago	8.50	8.80	9.25	12.70
Rails for rolling, Chicago	11.00	11.85	12.10	14.85

Sheets

Change to New Classifications Brings Some Price Irregularity —Mills Quoting Hot-Rolled

SHEET PRICES, PAGE 63

Pittsburgh—Some price irregularity is attending the change in classification and method of quoting sheets. Producers await further announcements regarding the prices of hot-rolled annealed sheets which are being quoted by some mills at 2.40c to 2.50c Pittsburgh, for No. 24 gage. Common black sheets usually are quoted 2.25c, but occasional reports of 2.15c are heard. Galvanized sheets have been sold at 2.75c, with 2.80c continuing the usual market. Blue annealed sheets have been fairly steady at 2.00c to 2.05c for No. 13 gage and 1.85c to 1.90c for Nos. 9 and 10 gage. Autobody sheets continue 3.10c. Business shows little change, holding around the rate of the past several weeks but being smaller than a month ago. Automotive demand has declined but little recently.

New York—Sheet mills are beginning to put new classifications into effect on new business, quoting No. 10 heavy cold-rolled 2.35c, Pittsburgh, and No. 20 cold-rolled 2.95c. Some mills still quote No. 24 black sheets 2.25c, Pittsburgh, with particularly attractive lots continuing to move at 2.15c.

Quotations of 1.85c and 2.00c on blue annealed plates and sheets, respectively, continue to rule. Galvanized sheets are 2.80c to 2.85c, Pittsburgh, with the lower figure the more representative.

Philadelphia—Cold-rolled sheets are being quoted under the new classifications by a few mills, but the majority have yet to take final action. Galvanized sheets are 2.75c to 2.85c, Pittsburgh, the lower price being limited to large jobbers. Blue annealed are 1.85c and 2.00c. Black are fairly steady at 2.25c, despite shading in other districts.

Buffalo—District sheet mills continue to operate at about 50 per cent. Demand is spotty.

Youngstown, O.—Sufficient specifications for the higher grades of sheets continues to come to district mills to insure fairly satisfactory rates of operations, around 55 to 65 per cent. Makers of common sheets, however, are forced to search for specifications to keep their mills going. The Falcon works of Empire Steel Corp. has resumed after several weeks' idleness, but this is offset somewhat by the closing of the Mahoning Valley Steel Co.'s plant, also at Niles. Other district sheet mills are active at 45 to 55 per cent of capacity. Common black sheets bring 2.25c, Pittsburgh, for carload business, with lower prices reported to large buyers. Autobody are 3.10c; galvanized, 2.80c to 2.90c; and blue annealed, 1.85c to 1.90c for Nos. 9 and 10, and 2.00c to 2.05c for No. 13. Hot-rolled annealed sheets are quoted 2.40c to 2.50c, base, Pittsburgh.

Cleveland—Consumer releases of sheets present a shrinking total. With the exception of the Fisher Body Co.'s specifications, demand has failed to show signs of stability. The Fisher plant is assembling as high as 5000 Chevrolet bodies daily, running five and a half days weekly, and has a night crew. The 2.15c figure on black sheets is more apparent this week, yet several interests fail to meet it. Galvanized are 2.80c to jobbing interests but various prices are quoted to the general trade. Autobody continue 3.10c and metal furniture 3.50c, Pittsburgh. A Mahoning valley sheet mill is quoting 2.50c for No. 24 gage hot-rolled annealed, under the new classification.

Cincinnati—Fresh demand for culverts and other road materials has partially offset lighter specifications from the automotive industry, enabling district sheet mills to maintain production above 50 per cent.

St. Louis—Moderate improvement is noted in specifications and new orders for sheets. Demand for galvanized shows more life, after being a low ebb for months.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.15c to 2.25c
Philadelphia, delivered	2.54c
Gary, Indiana Harbor	2.35c
Chicago, delivered	2.40c
Birmingham, base	2.40c to 2.50c
St. Louis, del.	2.70½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.55c to 2.65c
Gary, base	2.65c to 2.75c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.85c
Philadelphia, delivered	3.09c to 3.19c
Chicago, delivered	2.95c to 3.05c
Gary, Indiana Harbor	2.90c to 3.00c
Birmingham, base	2.95c to 3.05c
St. Louis, del.	3.25½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.00c to 2.05c
Chicago, district mills	2.10c to 2.15c
Chicago, delivered	2.15c to 2.20c
St. Louis, delivered	2.40½c
Philadelphia, delivered	2.29c
Birmingham	2.20c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.85c to 1.90c
Chicago, district mills	1.95c to 2.00c
Chicago, delivered	2.00c to 2.05c
Philadelphia, delivered	2.14c
St. Louis, delivered	2.25½c
Birmingham	2.05c to 2.10c

AUTOMOBILE NO. 20

Pittsburgh, base	3.10c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.50c

New Classifications, Pitts. base:

Heavy cold-rolled No. 10, 2.35c; cold-rolled No. 20, 2.95c; heavy furniture No. 10, 2.75c; light furniture No. 20, 3.35c; furniture No. 24, including patent leveling, 3.50c. Hot-rolled No. 10, 1.70c; hot-rolled No. 24, 2.40c to 2.50c. Differentials of 10 and 15 cents, respectively, apply at Gary, Ind., and Chicago, delivered.

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c to 2.30c
Spring wire	3.20c to 3.30c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l, Chicago	2.85c
7/16-in., smaller, Pitts.	70,10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

Steel Plates

Base, Pittsburgh	1.65c
Philadelphia, del.	1.85½c
New York, delivered	1.93c
Boston, delivered	2.05c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.80c to 1.85c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f.	2.00c to 2.05c
St Louis, del	1.95½c

Structural Shapes

Base, Pittsburgh	1.65c
Philadelphia, del.	1.76c to 1.81c
New York, del.	1.85½c to 1.90½c
Boston, del.	2.03½c to 2.08½c
Chicago, base	1.70c to 1.80c
Cleveland, delivered	1.83½c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham base	1.80c to 1.85c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Base, Pittsburgh	1.65c
Chicago, base	1.70c to 1.80c
Birmingham base	1.80c to 1.85c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.15c
Cleveland, base, local del.	1.70c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.94c to 1.99c
New York, del.	1.98c to 2.03½c
Boston, del.	2.05c to 2.10c
Pittsburgh, cold finish	1.80c to 1.85c
Pittsburgh, forg. qual.	1.90c to 1.95c

RAIL STEEL

Chicago Heights	1.60c to 1.65c
Eastern mills	1.50c to 1.55c

IRON

Chicago, base	1.70c to 1.80c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c
Stock lengths, mill	1.65c
Chi., billet	1.90c to 2.00c
Chi., rail steel	1.60c to 1.70c
Chi., rail steel, less carload	1.90c
Philadelphia, cut lengths	2.19c
Cleveland, cut lengths	1.95c to 2.05c

Cold Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.20	Cr., Ni., Van.	1.50
4100 .15 to .25		Carbon Van.	0.95
Mo.	0.50	9250 (flats)	0.25
4600 .20 to .30 Mo.		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c to 1.65c
Hot strip 6 1/16 to 24-in. Pitts.	1.50c to 1.55c
Hot strip, bands 6 in. and under, Chicago	1.70c
Do. 6 1/15 to 24 in.	1.60c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c to 2.25c
Worcester, 3 tons, over	2.40c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., Pittsburgh	2.40c to 2.50c
do, less carloads, 5 kegs or over, 2.65c to 2.75c; and less than 5 kegs	2.80c to 2.90c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Demand Generally Dull with Public and Automotive Needs Most Active—Prices Steady

BAR PRICES, PAGE 63

Chicago—Bar mill operations, at 55 per cent, remain slightly above the district's ingot rate. Highway building and surfacing are whetting bar mill specifications, in line with heavier structural activity resulting from bridge and other public work. Road equipment makers and deformed bar warehouses are holding to a steady volume. Except for public and automotive work, other bar consumers are quiet. Little concern is being given to prices. The base quotation remains at 1.70c, Chicago, while odd lots go at 1.75c to 1.80c. Offers of forward business at 1.75c have appeared. The latter now is more representative of the top of the spread than 1.80c. Automotive parts makers are scheduling approximately at the April volume. Alloy bar mills are at about 45 per cent.

New York—Commercial steel bars are moving generally at 1.65c, Pittsburgh, in car lots, with some business still reported at 1.70c. Demand continues listless. Common iron bars are 1.60c to 1.70c, Pittsburgh.

Philadelphia—Steel bars are quiet and the price is fairly steady at 1.65c, Pittsburgh. Iron bars are 1.60c to 1.70c, Pittsburgh.

Pittsburgh—Reports of prices lower than 1.65c applying on new steel bar business generally lack confirmation as the result of the light character of buying. Specifications are being received against 1.65c contracts with little change noted in the rate of business, while spot buying is negligible. Shipments so far this month show only a slight drop from the volume a month ago.

Youngstown, O.—Driblets of specifications for common steel bars continue to come to producers, enabling producing mills to operate around 35 to 45 per cent of capacity. Demand for alloy bars is somewhat better, due to needs of auto partsmakers. Common steel bars sell at 1.65c, Pittsburgh.

Cleveland—Bar demand continues without gains. Orders are generally small and infrequent. Sales run from 10 to 15 per cent behind April. Forging interests continue mostly on slack schedules. The Cleveland base on merchant steel bars at 1.70c locally is held, but in outlying districts to the west, business is keenly sought and 1.65c, Cleveland, has been under pressure. Alloy bar mill base has been cut $4 a ton to 2.45c, f.o.b. mill, from the former 2.65c base.

Cold-Finished Bar Demand Fails to Encourage

Cold Finished Prices, Page 63

Pittsburgh—Incoming business in cold-finished steel bars is declining gradually, while shipments so far this month are fairly steady. Automotive orders are smaller than a month ago and requirements of other consumers lacks improvement. The market generally continues 2.10c, Pittsburgh.

Cleveland—Demand for cold-finished steel bars continues without noticeable change, though trend of specifications shows a declining tendency. Users of cold-finished bar shapes for automotive work have shown smaller commitments. The open market is without change in price.

Low Bid on Steel Sash

Washington—Detroit Steel Products Co. was low on steel sash for the Chillicothe, O., department of justice building, on a bid of $1915.

Plates

Improvement Noted in Buying in Some Districts—44,000 Tons to Be Placed for Pipe Lines

PLATE PRICES, PAGE 63

Chicago — Tank plate prospects from the East Texas oil fields are more uncertain now because of the movement to pro-rate oil production there. Decision as to the pro-rating policies will be made in about 30 days. In the event of controlled production, possibilities of storage plate inquiries will be lessened. Some future plate tonnage has been booked in this territory at 1.75c, although 1.80c, Chicago, still is nominally quoted. About 44,000 tons of pipe line work of the western fabricator's orders from the Electric Bond & Share Co., and Ohio Oil Co. will be booked late this month. Skelp shipments for pipe line work will not be increased materially this month. May shipments to the Milwaukee fabricator from this district will be about 25,000 to 30,000 tons. New business wil extend shipments well through June. Some of the projected work, including the Panhandle-Illinois 22-inch gas line, remains in preliminary stages.

Great Lakes Dredge & Dock Co., Chicago, is low bidder for the construction of two bulkheads, each 1400 feet long, extending south in Lake Michigan to Eighteenth street, from one of the made islands. About 1000 tons of plates, structurals and piling will be required.

New York—While devoid of outstanding tonnage, plate buying has been well maintained. Sellers report an improvement in miscellaneous buying which has offset the absence of large orders. Early action on two or three projects, including the New York Central's west side terminal foundation work, on which P. T. Cox Contracting Co. is low bidder. Plates are 1.75c, Coatesville, Pa., in car lots.

Philadelphia—Demand for plates is light. Approximately 600 tons of plates, shapes and bars, mainly plates, for an excursion boat for the Wilson Line has been placed with an eastern Pennsylvania mill. Plate prices are weak at 1.75c, base, Coatesville, Pa.

Pittsburgh—Little new business in fabricated steel is appearing. Barge awards are quiet and new inquiry is lacking. Plate demand for line pipe construction continues rather limited while tank work is quiet. Shipments are little changed over the past several weeks. Spot buying is light and provides little price test. The market generally is 1.65c.

Cleveland—Several tank shops have added to their backlogs and operations have displayed a slight upturn. Sun Oil Co. is rumored to have placed a large tank order with Akron, O., and Chattanooga, Tenn., tank fabricators. Chicago Bridge & Iron Works has taken the contract for a 2,000,000-gallon booster tank in Columbus, O., and will fabricate it at either Greenville, Pa., or Chicago. The Clay City, O., plant to be built for the Kelley Island Lime & Transport Co. is taking a carload of floor plates. The market is more representative at 1.65c, base, Pittsburgh.

Toronto, Ont.—Toronto Iron Works

has received a consignment of 1000 tons of plates from the British Steel Export association, through J. I. Piggott, the association's representative in Montreal. The consignment was produced by members of the association in England, Scotland and Wales and was made possible by the new Canadian tariff, it is said. The consignment received was chiefly heavy plates. It is said that American steel will be used where time does not permit imports from Great Britain.

Contracts Placed

1000 tons, welded steel pipe line for University Mound district, San Francisco, to Consolidated Steel Corp., Los Angeles.

344 tons, 12 to 16-inch welded steel pipe, Kettleman Hills, Calif., to Western Pipe & Steel Co., Los Angeles.

135 tons, sheet steel piling, cofferdam, Ford Motor Co. assembly plant, Seattle, to German producers.

Unstated tonnage, one 2,000,000-gallon booster tank, for Columbus, O., city water department, to Chicago Bridge & Iron Works, Chicago, work to be done at either Greenville, Pa., or Chicago.

Contracts Pending

35,000 tons, Hetch Hetchy pipe line, San Francisco. Bids postponed from May 6 to 20.

300 tons, plates and shapes, two steel hulls for United States engineers, St. Louis district; St. Louis Structural Steel Co., low bidder.

Tin Plate Specifications Steady; Output Slackens

Tin Plate Prices, Page 63

Pittsburgh—Activity in tin plate still is tending downward, although at a slower rate than several weeks ago. Mill operations are irregular. Output of some plants continues at nearly capacity, but rates of 70 per cent and less at other points brings the general average to around 75. Specifications are fairly steady with some improvement in prospect due to the fact that orders are scheduled now for July shipment. Tin plate continues $5, Pittsburgh, per base box.

Bids on Police Needs

New York—Bids will be taken May 15 by the department of purchase on 6300 black metal traffic arrows of 10, 12 and 14 gage sheets; 500 gray cast iron bases, 12-inch diameter, total weight 19,000 pounds; 20,000 machine bolts, 1000 1-inch malleable iron eye-ring caps, 500 galvanized 3-inch fasteners, 1500 malleable iron lamp hooks and 5250 feet of wrought iron pipe. All material is for the police department.

Railroads

Fastening Releases Expand in West—Car Repair Work Off—500 Car Inquiry Out

TRACK MATERIAL PRICES, PAGE 63

Chicago—Track accessory releases have approximately doubled during the week. Sales continue at about 1200 to 2000 tons weekly. Several small miscellaneous rail orders were closed, less than 1000 tons. Track fastenings releases over the week have been the best in over 60 days. Western roads are specifying 5000 to 8000 tons of rails weekly against the 500,000 to 600,000 tons, ordered in the primary rail buying program of late 1930 and early 1931. Rail programs likely will extend through most of June.

Several roads are making extensive repairs on wooden cars, while steel car repair work has been tapering. Only one car shop in the district is operating. This plant is building about 300 tank cars for leasing and has tank car repair work scheduled.

New York—Car inquiry is light, possibly 400 freight cars actively pending. The Northern Pacific is inquiring for 500 box car underframes.

Buffalo—Pennsylvania railroad has partially closed its shops at Olean, N. Y., where "back" repairs, or those units in which heavy locomotives repairs are made. These ships are contrasted to those in which ordinary running repairs are carried out.

Pittsburgh—Recent specifications from railroads for various steel products have been heavier although business so far this month shows a moderate decrease from the April rate. Railroads are buying cautiously for early needs and activities of car shops continue at a low rate. Inquiry is lacking for track material and cars.

Cleveland—No inquiry for rails or equipment is out from the large carriers with headquarters in this district. Occasional releases are made on fastenings but they are far from steady and are not involving quantities. Atlas Car & Mfg. Co., Cleveland, has placed electrical equipment with Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for two pusher-type locomotives which were recently contracted for the Pennsylvania railroad ore docks here.

Wheeling & Lake Erie is inquiring for 200 65-ton gondolas, but may use old trucks.

Toronto, Ont.—Algoma Steel Corp., Sault Ste. Marie, Ont., rail and merchant mills are operating steadily and giving employment to about 2100 men, but within a month all orders for rails will have been completed, with result that the rail mill may have to be closed, releasing between 400 and 500 men. Actual operations at the present time are only about two-thirds normal, and outlook for the remainder of 1931 is not as favorable as it was at the corresponding time of 1930.

Car Orders Placed

Board of Transportation, New York, 16 service cars, including six trailer flat cars, six air dump cars, two motor flat cars, one emergency pump car and one trailer supply car, to Magor Car Corp., New York.

Rail Orders Placed

Seaboard Air Line, 1000 tons, 100-pound rails, to Bethlehem Steel Co., Bethlehem, Pa., in addition to 4000 tons, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., noted in STEEL of April 30.

Car Orders Pending

Board of transportation, New York, 300 or more, steel passenger subway cars. Contract to be awarded in July. Previous order for 300 awarded American Car & Foundry Co., New York. Approximately 1800 for subway service in total.

Northern Pacific, 500 box car underframes.

Wheeling & Lake Erie railroad, 200 65-ton gondolas; may use old trucks.

Locomotives Pending

Central of New Jersey, five tenders, 21,000 gallons water capacity, 24 tons of coal; equipped with 6-wheel trucks.

Diamond Match Co. one 10-ton vulcan type, to Clyde Equipment Co., Seattle.

United States engineers, Memphis, Tenn., ten gasoline locomotives; bids opened May 13.

Colorado Picking Up

Denver—Colorado Fuel & Iron Co.'s rail mill, Pueblo, Colo., will resume operations May 18 on single turn. Blast furnace "E" was started May 11 and on May 15, nine open hearths are scheduled to begin production. Increased operations will recall between 400 and 500 men. Coke plant units began operations May 11.

Murray Co., Dallas, Tex., manufacturer of cotton gin machinery, has increased its capital from $2,000,000 by issue of 15,000 shares of no par value.

Structural Shapes

Inquiry Booms in West and South, Involving Possible 200,000 Tons for Award Within Month—Lettings Ease in East—New York Subway Is Postponed

STRUCTURAL SHAPE PRICES, PAGE 63

New York—Structural steel lettings, while fairly numerous, continue light in tonnage. Fresh active inquiry is also off. Inquiries are expected soon on a large apartment house, 1500 tons, the first in several months of this size. Several other large jobs are expected. Work on the Sixth avenue subway section has been held up due to fear to damage to the water main supplying Brooklyn and Queens. While the proposal calling for 5360 tons due to have been opened May 19 has been withdrawn, it is possible that some work on this section may go ahead above Thirty-sixth street before completion of the water tunnel 18 months to two years hence.

Plain material prices are 1.70c to 1.75c, eastern mill. Fabricated steel prices are still unsettled and weak.

Public Service Corp. building at Burlington, N. J., will take 1000 tons and the Metropolitan avenue bridge, Brooklyn, N. Y., bids May 19, calls for 900 tons.

Boston—An additional building for Tufts college, Medford, Mass., taking 600 tons, was awarded to the New England Structural Co. while the state bridge, Lisbon, Me., was placed with the American Bridge Co. New pedriatic building for the Boston city hospital calls for 500 tons.

Philadelphia—Shapes are easy at 1.76c, Philadelphia, on carloads. Structural tonnage is light. Three thousand tons for the Reading, Pa., courthouse, previously noted as going to an unstated fabricator, went to Bauman Iron Works, Reading.

Pittsburgh — Fabricated structural shape business is made up mostly of small lots for which there is a fair amount of inquiry. Specifications for plain material are fairly steady but continue slow. New business is providing prices with little test, the market generally being 1.65c, Pittsburgh.

Cleveland—Aside from the closing on the Strong, Carlisle & Hammond Co. warehouse nothing of large tonnage was contracted over the week. American Multigraph Co. 800-ton new plant adds to the list of pending as does a 100-ton storage plant at Alliance, O. The 620-ton City hospital addition nears award. Plans are awaited on the new juvenile court building and plant for the Ohio Bell Telephone Co.

Chicago—More structural business is taking form. The New Orleans belt line railroad bridge, 60,000 tons, is being postponed but other work in this territory, also west and south, for which bids will be asked within the next 30 days, totals 175,000 to 200,000 tons. It is stated that 40 jobs which may be active within the next month amount to 155,000 tons. It is stated that 40 jobs which may be active within the next month amount to 155,000 tons. Most of the prospective inquiries are road and public work. Some forward plain material business has been booked by mills in this territory at 1.75c, Chicago, while shipping now is largely on 1.70c orders.

Contracts Placed

2635 tons, 19-story courthouse and county building, Reading, Pa., to Bauman Iron Works, Reading; McCloskey Contracting Co., Philadelphia, general contractor. Reported in STEEL of May 7 to unstated fabricator.

2200 tons, science building for Century of Progress exposition, Chicago, through McLennan Construction Co., to Hansell-Elcock Co., Chicago.

1276 tons, bridge over Androscoggin river, Brunswick, Me., to Boston Bridge Works, Boston.

1000 tons, postoffice, Camden, N. J., to American Steel Fabricators; Agostini Bros., New York, general contractors. Reported to STEEL of May 7 to unstated fabricator.

1000 tons, Pennsylvania railroad bridge, Pittsburgh, to McClintic-Marshall Corp., Bethlehem, Pa.

1000 tons, bridge over Mississippi river at Prairie du Chien, Wis., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

1000 tons, City National Bank building, Lansing, Mich., to Jarvis Engine & Machine Works, Lansing, Mich.

900 tons, theatre, Third avenue and Seventy-second street, New York, to Hinkle Iron Co., New York; Aronberg-Fried Co., general contractors. Reported last week as 650 tons going to unstated fabricators.

800 tons, coal bridge for Milwaukee Electric Railway & Light Co., Milwaukee, Wis., to Milwaukee Bridge Co., Milwaukee.

800 tons, building, Yale university, New Haven, Conn., to Pittsburgh Bridge & Iron Works, Pittsburgh.

800 tons, bridgework, Nebraska, allocated as follows: 600 tons to Omaha Structural Steel Co., Omaha, Nebr., and 200 tons to Paxton & Vierling Iron Works, Omaha.

700 tons, grand stand, Indianapolis, to Insley Mfg. Co., Indianapolis.

600 tons, highway bridge, Fort Plain, N. Y., to American Bridge Co., Pittsburgh, through Aloe Hansen, Pittsburgh, general contractor.

600 tons, Tufts college building, Medford, Mass., to New England Structural Co., Boston.

500 tons, Kress store, Sacramento, Calif.; to Minnesota-Moline Power Implement Co., Minneapolis.

500 tons, 4-story garage, Christopher street, New York, to Grand Iron Works, New York.

450 tons, buildings for Illinois Bell Telephone Co., Joliet, Ill., to unstated fabricator.

420 tons, Twenty-Eighth street bridge, Pittsburgh, to American Bridge Co., Pittsburgh.

400 tons, bridges in Ohio, Pennsylvania railroad, to American Bridge Co., Pittsburgh.

400 tons, church, Seventy-fourth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.

400 tons, 4-story garage, West End avenue and Sixty-fourth street, New York, to Easton Structural Steel Co., Easton, Pa.; Wallenstein Construction Co., general contractor.

400 tons, highway bridge, Santa Barbara, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

396 tons, three-story office building, Wise, Smith & Co., Hartford, Conn., to Levering & Garrigues division, McClintic-Marshall Corp., Bethlehem, Pa., Southern New England Construction Co., general contractor.

300 tons, Lawe street bridge, Kaukauna, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

300 tons, high school, Santa Barbara, Calif.; to Minnesota-Moline Implement Co., Minneapolis.

321 tons, store and office building, Poughkeepsie, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

300 tons, athletic cage, Wesleyan college, Middletown, Conn., to Lehigh Structural Steel Co., Allentown, Pa., through H. Wales Lines Co., Meriden, Conn., general contractor.

300 tons, highway bridge, Clinton, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

285 tons, highway bridge, Heidlersberg borough, Pa., for Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, Y. M. C. A. trade school, West Sixty-third street, New York, to George A. Just Co., Long Island City, N. Y., through William L. Crow Co., contractor.

250 tons, branch bank, West River Savings Co., Ninety-sixth and Amsterdam avenues, New York, to McClintic-Marshall Corp., Bethlehem,

Awards Compared

	Tons
Awards this week	**18,677**
Awards last week	**22,690**
Awards two weeks ago	**25,502**
Awards this week in 1930	**68,425**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**39,958**
Av. weekly awards, April	**49,224**
Total awards to date, 1930	**701,044**
Total awards to date, 1931	**799,166**

Pa., through Fred T. Ley Inc., contractor.
250 tons, 8-story medical building, East Orange, N. J., to Charles Goeller Inc., Newark, N. J.; Robert Allen, Inc., Newark, general contractor.
250 tons, public school 36, Annadale, Staten Island, N. Y., to Harris Structural Steel Co., New York; Roth & Gould, Inc., general contractors.
225 tons, Belvidere, Allegheny county, New York, to Lackawanna Steel Construction Co. Inc., Buffalo, N. Y.; 34 tons of bars awarded to Kalman Steel Co., Chicago, through William L. Hollins, Hornell, N. Y., general contractor.
200 tons, Mutual State building, Los Angeles, to Consolidated Steel Corp., Los Angeles.
200 tons, warehouse, East Twenty-eighth and St. Clair avenues, Cleveland, for Strong, Carlisle & Hammond Co., to Kilroy Structural Steel Co., Cleveland, through William J. Dunbar Co., general contractor.
200 tons, apartments, Morris and College avenues, Bronx, N. Y., to Eschen & Oboler Iron Works, Bronx, N. Y.
200 tons, jail and office building, Morristown, N. J., to Arny Steel Construction Co., Elizabeth, N. J.; Bontempo & D'Annunzio Inc., Morristown, N. J., general contractors.
200 tons, dormitories and transformer house, Seaview hospital, Staten Island, N. Y., to Alton Iron Works, New York.
191 tons, Dime Savings bank, Brooklyn, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.
190 tons, bridge, Gaston county, North Carolina, to Virginia Bridge & Iron Co., Roanoke, Va., through R. H. Blackwell, Kingsport, Tenn., general contractor.
165 tons, 7-story apartment, Yonkers, N. Y., to D. & R. Iron Works, Bronx, N. Y.
140 tons, additional buildings and chapel, hospital, Beacon, N. Y., to Belmont Iron Works, Philadelphia.
133 tons, school, Cheektowaga, N. Y., to Lackawanna Steel Construction Co. Inc., Buffalo.
130 tons, Brilliant pumping station, Pittsburgh, to Keystone Engineering Co., Pittsburgh.
125 tons, 100 tons of 10-inch H columns and 25 tons plain shapes, bridge over Chalone creek, Salinas, Calif., to Pacific Coast Steel Corp., San Francisco.
100 tons, laundry and bath building, Sing Sing prison, Ossinning, N. Y., to Lieder Structural Steel Co., New York.
100 tons, state bridge, Lisbon, Me., to American Bridge Co., Pittsburgh.

Contracts Pending

4000 tons, grade crossing work, Detroit district, for Wabash, Pere Marquette, and Grand Trunk railroads; Michigan Central requirements to come.
3000 tons, city hall and courthouse, St. Paul.
2100 tons, building for Indiana Bell Telephone Co., Indianapolis.
1500 tons, addition to postoffice and federal building, Salt Lake City, Utah.
1500 tons, bridge work for Wisconsin highway commission.
1000 tons, Masonic Home, Maryland.
1000 tons, building, Public Service Corp. of New Jersey, Burlington, N. J.
900 tons, bridge, Metropolitan avenue, over English Kills, Brooklyn; bids May 19, department of plants and structures, New York.
800 tons, plant addition, American Multigraph Co., Cleveland.
800 tons, Humboldt park sub-station for Commonwealth Edison Co., Chicago.
800 tons, bridges for Nebraska highway commission.
800 tons, highway bridge, La Crosse, Wis.
750 tons, interstate bridge between LaCrosse, Wis., and LaCrescent, Minn.; bids close May 26.
700 tons, bridge for Chicago, Burlington & Quincy railroad, at La Salle, Ill.
700 tons, Chicago & North Western railroad track elevation, Kenosha, Wis.
700 tons, pumping station addition, Chicago.
620 tons, City hospital tuberculosis ward, Cleveland; Ingalls Iron Works, Verona, Pa., low; Crowell & Little, contractors.
250 tons, construction work, Noble, Pa., for Reading railroad.
500 tons, hospital addition, Boston.
500 tons, Illinois bridgework; bids May 12.
360 tons, grade crossing, Cobleskill, N. Y., Delaware & Hudson railroad.
200 tons, substation, Garland court, Chicago, for Commonwealth Edison Co., Chicago.
175 tons, warehouse of port commission, Oakland, Calif.; Herrick Iron Works, Oakland, low.
150 tons, highway bridges, Pennsylvania.
113 tons, bridge over Trinity river, Sacramento, Calif.; bids received.
100 tons, storage plant, Alliance, O.

Concrete Bars

Estimating Activity at Chicago Mirrors Large Volume Pending Public Work—Billet Prices Firmer in East—Mill Business Good at Pittsburgh—Awards, 6360 Tons

REINFORCING BAR PRICES, PAGE 63

New York—New billet reinforcing bar prices are firmer and steadier on small and medium-sized shipments. Large volume business and rail steel bars are still subject to concessions. Inquiry is light and buyers are slow to close on several large pending projects. Highways continue to take a good volume of road mesh. Demand for private construction is light.

Boston—Two school house buildings in Boston call for 400 tons, expected to be awarded soon. Northern Steel Co. closed on 150 tons for state roads, while another 150 tons went into several small projects. Two storehouses, one at Smithville, R. I., and another in the Jamaica Plain district, Boston, will take 475 tons.

Philadelphia — Reinforcing bar tonnage is light with the market 1.60c to 1.65c, Pittsburgh. Subway work, 1200 tons, went to Truscon Steel Co., Youngstown, O., through Jaffola & Mark, general contractors.

Buffalo—Inquiry for 475 tons for further additions to the East Buffalo food terminal of the Erie and Nickel Plate railroads has been released.

Pittsburgh—Incoming business to mills continues at the improved rate noted earlier in the month. Specifications against old orders have improved. New business shows little change and is limited to small lots. The market usually continues 1.65c for stock lengths and 1.90c for cut lengths.

Cleveland—National Concrete Fire Proofing Co. has placed 420 tons for Auburn, N. Y., work. Steel in the bridge to be built by the Industrial Construction Co. for the Cleveland and Terminals Corp. has been placed, the second bridge possibly to be built within the year. Bids go in May 15 for 300 tons of billet steel for county bridge, Columbus road, and Hecker-Moon, Cleveland, has general contract for Wolf road county bridge, 205 tons.

Chicago—About 500 tons of reinforcing bars for road work is being distributed to fabricators from the April 14 Illinois highway department letting, and 450 tons is pending of the May apportionment. Billet bars are uoted 1.90c to 2.00c. Road, bridge and culvert bars are steady. Fabricators' estimating departments are more busy than at any time this year, largely for public work. Thirty-seven federal postoffice jobs in Illinois are to be let.

Awards Compared

	Tons
Awards this week	**6,360**
Awards last week	**8,296**
Awards two weeks ago	**3,359**
Awards this week in 1930	**9,148**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**7,026**
Av. weekly awards, April	**5,627**
Total awards to date, 1930	**142021**
Total awards to date, 1931	**140,517**

Contracts Placed

1200 tons, subway work, Philadelphia, to Truscon Steel Co., Youngstown, O., through Jaffola & Mark, general contractors.
600 tons, commercial building, New Orleans, to Joseph T. Ryerson & Son Inc., Chicago.
450 tons, highways, route 6, section 2

(*Concluded on Page 71*)

Strip

Specifications Steady with Automotive Consumers Giving Best Support—Radio Needs Small

STRIP PRICES, PAGE 63

Pittsburgh—Strip specifications, although rather spotty, are fairly steady and show little change since the latter part of April. Requirements of most automotive interests are well maintained, the principal decline being noted in Ford orders. Producers are attempting to take a stronger stand on prices and are quoting 1.65c and 1.55c more frequently on what new hot strip business is appearing. Most shipments against orders, however, are moving at $1 a ton less. Cold strip is 2.15c to 2.25c. Mill operations are steady, continuing around 40 per cent, with recent rates of some mills as high as 50.

New York—Concessions are becoming common in the strip market. Hot-rolled is now 1.50c to 1.55c, Pittsburgh, for wide, and 1.60c to 1.65c for narrow. Cold-rolled strip is 2.15c to 2.25c, Pittsburgh, with a fair proportion of business still moving at 2.25c to the general trade.

Philadelphia—Efforts to regain lost ground in the price of hot-rolled strip have availed little and it is moving at 1.50c and 1.60c, Pittsburgh. Cold-rolled strip is 2.15c to 2.25c, Pittsburgh, with the former more general. Buying is dull. The radio industry is in the usual summer lull with the chief local interest operating at 10 per cent of capacity. It is likely to buy little cold strip until fall.

Youngstown, O.—Strip orders continue to taper somewhat in volume compared with preceding weeks, but the decline has been gradual. This applies as well to cold-rolled as to hot-rolled, although it is more noticeable in the latter. Reports of large orders recently received by certain independent mills in this district are not confirmed officially. One important maker in this district has put out an asking price on hot-rolled $1 a ton higher, or 1.55c, Pittsburgh, for over 6-inch and wider, and 1.65c for 6-inch and narrower.

Cleveland—Hot-rolled strip production is advancing, several interests reporting growing volume of orders from week to week. In this district, carload lots of hot have been sold in the past week at 1.55c and 1.65c, for wide and narrow, respectively, though it is unquestionably true that orders for larger quantities command $1 a ton under these figure. The market on cold-rolled is unchanged at 2.25c, Cleveland, and mill output has not been commensurate with the expansion in hot-rolled strip.

Chicago—Pressure for lower prices is coming from hot-rolled strip buyers. Mills are quoting a single price of 1.70c, Chicago, for hot-rolled strip under 6 inches in width. The wider sizes are 1.60c. Mill operations continue at 40 to 50 per cent.

Warehouse Sales Hold April Rate in Most Cases

Warehouse Prices, Page 85

Pittsburgh—Business is quiet, sales lacking improvement over the April rate. Orders take only small lots. Sheet prices are easy on the larger lots but generally unchanged on small orders. Other quotations are fairly steady.

New York—Volume of steel out of warehouse holds at the recent pace. Prices are more stable, although concessions are noted on attractive blue annealed sheet business. Recent changes in sheet classifications have not as yet involved New York warehouses, but jobber resale prices will probably be based on the changed classifications later.

Detroit—Sales continue to run ahead of April. It is understood that one of the jobbers here will inaugurate the following: Base price on bars, bands, hoops to be reduced 15 cents. Galvanized and one-pass sheets to be taken out of the quantity reduction plan and prices to be 4.00c and 3.50c, base, respectively with 50 cents per hundredweight extra for split bundle lots. Quantity reduction plan to have additional bracket, 50 cents above base, for orders under 399 pounds. Bracket which previously specified orders between 4000 and 7999 pounds now becomes 1000 to 7999 pounds.

Cleveland—Little change is noticeable in consumer demand. Joseph T. Ryerson & Son Inc. have added a concrete reinforcing bar stock locally and will have fabricating facilities. Recently the Bourne-Fuller division of Republic Steel Corp. turned over its concrete bar fabricating business to Truscon Steel Co. Leading interests have announced $2-a-ton reductions on hot-rolled bars, bands, hoops and sheets, effective May 15. Slight revision of the quantity differential pricing plan will become effective at the same time. On quantities from 1000 to 7999 pounds the discount will be 15 cents a hundred, which heretofore applied only from 4000 to 7999 pounds. Other differentials remain unchanged.

Philadelphia—Trading is light, but maintained at the April rate. An announcement may be made soon as a result of the new mill sheet classification.

Chicago—May warehouse sales are gaining over April. Structural business has been cut down by small orders recently taken by the mills. Wire products move slowly, except for a mild upturn in nail demand.

Operations Decline One Point to 47 for Industry

Youngstown, O.—Steel operations are unchanged from last week at 42 per cent. Large producers show few changes in schedule for the week, with the average approximately 23 points below the level of a year ago. Republic Steel production in the district is again at 48, Carnegie is at or slightly under 50, Sheet & Tube at 30 to 35, and Newton Steel at 65 per cent.

Philadelphia—Eastern ingot operations are off a point this week to 43 per cent capacity. A leading mill is down fractionally from 48 per cent.

Buffalo—District steelworks operations are off five points this week to 54 per cent capacity. Only roughing mills are now on double turn.

Pittsburgh—Steel plant operations remain fairly steady. Ingot production is slightly lower by a point this week at 45 per cent, while schedules of steelworks blast furnaces have been increased by one active stack to 21 of 54 in the district.

Cleveland — Open-hearth operations, gaged by active furnaces, are up three points this week and with 20 of 34 open hearths pouring, the ingot rate is 59 per cent.

Chicago—Ingot production is down two points this week to 48 per cent. Finishing mills are well sustained. Active steelworks blast furnaces number 14 out of 36. Wisconsin Steel Co. recently blew out one of its two furnaces.

Birmingham, Ala.—Ingot production remains steady, the district maintaining pace of 65 per cent of capacity. Secondary orders for railroad needs add slightly to orders on hand.

Concrete Bars

(*Concluded from Page 67*)

and route 1, section 7, Fort Lee and Englewood Cliffs, N. J., to Igoe Bros., Newark, N. J., through Giovanni Construction Co.

420 tons, foundry, machine shop and other buildings, state prison, Auburn, N. Y., to Concrete Steel Co., Pittsburgh, through National Concrete Fire Proofing Co., Cleveland.

300 tons, bridge for Cleveland Union Terminals Corp., Cleveland, to unstated fabricator through Industrial Construction Co., Cleveland.

300 tons, apartment, Franklin street, Los Angeles, to unstated company.

160 tons, interceptor sewer, Lansing, Mich., to Capitol Steel Corp., Lansing; Ray Sablain, general contractor.

150 tons, dormitories, Notre Dame university, South Bend, Ind., to Truscon Steel Co., Youngstown, O.

125 tons, state road work, Boston, to Northern Steel Co., Boston.

100 tons, bridge, Gaston county, North Carolina, to Concrete Steel Co., Pittsburgh, through R. H. Blackwell, Kingsport, Tenn., general contractor.

100 tons, McLean avenue bridge, Tibbetts valley brook, Yonkers, N. Y., to Concrete Steel Co., Pittsburgh.

Contracts Pending

12,000 tons, Pennsylvania railroad track elevation work, Chicago.

3000 tons, Illinois highway work; bids May 12.

1110 tons, Principia college, Alton, Ill.

500 tons, cold storage warehouse, New York Central railroad, West Fourteenth street, New York.

420 tons, viaduct, Sloat boulevard, San Francisco; bids May 20.

350 tons, storage warehouse for Boston Consolidated Gas Co., Jamaica Plain district, Boston.

350 tons, hotel, Phoenix, Ariz.; bids being received.

300 tons, county bridge, Columbus road, Cuyahoga county, O.; bids in May 15; billet steel specified.

255 tons, Hetch Hetchy pipe line, San Francisco; bids postponed from May 6 to 20.

205 tons, Wolf road bridge, Cuyahoga county; general contract to Hecker-Moon Co., Cleveland.

200 tons, highway, New Rochelle, N. Y.

200 tons, library for Claremont college, Claremont, Calif.; bids being received.

148 tons, highway work in San Joaquin county, Calif.; bids received.

135 tons, new Trier high school, Winnetka, Ill.

125 tons, storage warehouse, Smithville, R. I.

114 tons, crossing, San Mateo county, Calif.; bids May 20.

100 tons, newspaper building, Pasadena, Calif.; bids being received.

100 tons, highway work, Placer county, Calif.; bids received.

Unstated tonnage, addition state hospital, Pendleton, Oreg.; cost estimated, $200,000.

Discover Canadian Ore

An important discovery of a hematite iron ore, analyzing 65 per cent iron, 23 per cent silicon, with 0.03 per cent phosphorous, has been reported in the Steep Rock Lake area near Atikokan, Ont., west of Fort William.

Pipe

Eastern Cast Prices Sag—Western Municipal Work Off—Montana Line Awarded

PIPE PRICES, PAGE 85

Pittsburgh—Line pipe inquiries are slow to be booked despite the large number of projects under consideration. A fair volume of business is being received in small miscellaneous lines but large lots are few. Atlantic Refining Co. is understood to have placed 9000 tons of 6 and 8-inch pipe for an eastern line. Standard Oil Co. of New Jersey also is considering laying a line from Tioga, Pa., to Syracuse, N. Y. Lack of financing and obtaining of franchises is expected to defer action on several proposed lines.

New York—Cast pipe prices continue to sag with $32, eastern foundry, easy on attractive volume. Fresh inquiry is light. Bids are in on approximately 525 tons for Waddington, N. Y. Parkersburg, W. Va., is inquiring for about 1850 tons. Washington has placed 1825 tons of 30 to 48-inch. Spring Lake, N. J., placed 1000 tons and approximately 1000 tons for two Westchester county jobs were awarded. Two contractor lettings and a small inquiry for special fittings and high pressure pipe make up New York City activity.

Philadelphia—Recently noted reduction in the market for direct mill shipments dominates the discussion in the steel pipe trade, opinion being divided as to the advisability of the measure. Some charge the reduction tends to bring mill and its own distributor in competition with one another and to make direct mill shipments apply to a wider range of buyers than is good market practice. Others, in denying these charges, assert the action was necessary in coping with unsettled conditions prevailing particularly in certain districts.

Cleveland—Between 220,000 and 230,000 feet, 3875 tons, of 10-inch steel pipe to be used for the Cincinnati terminal project was awarded through MacArthur Concrete Pile Corp., Cleveland, to Jones & Laughlin Steel Corp., Pittsburgh.

Chicago—Municipal pressure pipe inquiries have dropped off after rather spirited activity since early in the year. Chicago board of public works took bids early in the week for 5000 tons of 6 to 12-inch, and Detroit has tabulated bids on 700 tons of 36-inch. Six to 24-inch sizes command $45, delivered. Municipal work is from $42, up.

Birmingham, Ala.—New lettings are scarce and specifications against contracts on hand do not warrant active production. Three or four contracts are in sight for this week.

Cast Pipe Placed

1825 tons, 30 to 48-inch, water mains, Washington, to Lynchburg Foundry Co., Lynchburg, Va.; J. B. McCrary Co., Atlanta, Ga., general contractor.

1000 tons, 6 to 10-inch, for Spring Lake, N. J., to United States Pipe & Foundry Co., Burlington, N. J.

780 tons, 18 to 24-inch, Westchester county sanitary sewer commission, New York, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

380 tons, up to 20-inch, White Plains, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

250 tons, 6 to 12-inch, for Appleton, Wis., to James B. Clow & Sons, Chicago.

200 tons, 10-inch for Audubon, Iowa, to American Cast Iron Pipe Co., Birmingham, Ala.

Steel Pipe Placed

42,000 tons, steel gas pipe, two lines in Montana for Phoenix Utility Co., subsidiary of Electric Bond & Share Co., New York, to A. O. Smith Corp., Milwaukee. One line, 32,000 tons, is 10¾, 12¾, 16 and 20-inch; the second, 9000 tons, is 10¾-inch. Inquiries for auxiliary lines will be brought out later.

12,000 tons, 18 and 20-inch, installation in Indiana, for Columbia Gas & Electric Co., to National Tube Co., Pittsburgh.

9000 tons, 6⅝-inch, for Atlantic Refining Co., to National Tube Co., Pittsburgh.

6600 tons, approximately, ten miles, 8-inch, awarded through Belmont Quadrangle Drilling Co., to Ruch & Co., Bradford, Pa.

3850 tons, 220,000 feet 10-inch steel pipe, for Cincinnati Terminals project, Cincinnati, to Jones & Laughlin Steel Corp., Pittsburgh, through MacArthur Concrete Piling Corp., Cleveland.

2000 tons, 10, 18 and 20-inch, for Pennsylvania railroad station, Philadelphia, to Youngstown Sheet & Tube Co., Youngstown, O.

1735 tons, 18-inch steel pipe, foundations, United States parcel post building, Ninth and Tenth avenues, Twenty-ninth and Thirtieth streets, New York, to Youngstown Sheet & Tube Co., Youngstown, O.; Pierce Steel Pile Co., sub-contractor under I. B. Miller, general contractor for foundations.

Cast Pipe Pending

1900 tons, 6 to 12-inch, class C, bell and spigot, with fittings, water district extension, Parkersburg, W. Va.; bids taken May 12.

1150 tons, 6 to 20-inch, for Milwaukee; United States Pipe & Foundry Co., Burlington, N. J., low; base price, $43.50 if let in aggregate, otherwise $44.50.

A corner of the Granite City Steel Company's mill warehouse

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525 tons, 6 to 10-inch, for Waddington, N. Y.; bids in. Contract also includes 200,000-gallon steel tank and pump house.

300 tons, 10 to 16-inch, for Valparaiso, Ind.

100 tons, 6-inch class C, improvement of Addison street, San Diego, Calif.; bids received.

Steel Pipe Pending

2000 tons, 3 to 18-inch, central steam heating plant, Washington, district bounded by Pennsylvania avenue, Maryland avenue and Fifteenth street; United Engineers & Constructors Inc. by United States treasury department.

700 tons, 48-inch, for department of water supply, New York; bids opened May 12.

Semifinished Demand Slower Than Month Ago

Semifinished Prices, Page 74

Pittsburgh — Specifications for semifinished steel are moderating gradually as the result of declining operation of finishing mills. Recent shipments show little change but are smaller than a month ago. New business continues light, being confined to small orders on which prices are receiving little test. Producers generally quote $30, Pittsburgh, for rerolling billets, slabs and sheet bars, $36 for forging billets, and $35 to $37 for wire rods.

Philadelphia—Billet prices are untested at $30, Pittsburgh, for rerollers and $35 for forging. Local forge plants are not operating more than two days a week.

Youngstown, O.—Sheet bars and billets are moving in limited amounts from producing mills to consumers. Few contracts are in force due to the uncertainty of consuming mills' operations. Billets, slabs and sheet bars for prompt shipment hold at $30, Youngstown and Pittsburgh.

Cleveland—Better specifications have led the leading merchant producer here to add another unit to its active open hearths, now operating eight of 14. New orders are small. Sheet bars are $29 to $30, base, Cleveland and Youngstown, O., and billets and slabs $30.

Traffic Signal Posts Let

New York—Donald H. Walter & Co. Inc. has been awarded the contract for 700 type B and 200 type A traffic signal posts for the police department through the department of purchase, the contract involving approximately 110 tons of gray iron and malleable iron castings. The successful bid was $23,278.

Wire

Shipments Light as Spring Needs Are Filled—Jobbers More Active Replenishing Stocks

WIRE PRICES, PAGE 63

Chicago—Woven fencing orders are tapering, following a fairly active season. In some districts, notably the northwest, the volume was close to a year ago. Jobbers, having largely liquidated the stocks built up about six weeks ago, are taking heavier shipments. New jobber business on nails ranges at $1.95 to $2.05, Chicago or western mills. Manufacturers' wire is expected to gain slightly over April.

Worcester, Mass.—Production is holding its own generally, though the slight tapering off, heretofore noted, continues. Expectations are that production will continue at substantially the present rate, 50 per cent of capacity, until the usual seasonal summer slump. The automobile industry, directly and indirectly, is an important factor.

New York—Plain bright wire at 2.20c, Pittsburgh, is subject to shading, with trading generally light. Nails are easy at $1.90, Pittsburgh.

Buffalo—Demand for wire and its products continues sufficient to keep local works operating at 75 per cent of open-hearth capacity. The present quarter is the best in sales and shipments in some time, with promise of continued good operation for several weeks.

Pittsburgh—Wire shipments continue light and incoming business also is restricted. Jobbers are light buyers as the result of the fairly heavy tonnage placed in closing out old contracts, the active period of the fencing season is nearly ended and requirements of manufacturers' wire consumers are moderating. Automotive requirements are fairly steady but spotty. Prices remain at the former bases of $1.90 to $2 to jobbers for wire nails, 2.20c to 2.30c for plain wire and $35 to $37 for wire rods.

Cleveland—Wire specifications continue steady, buoyed largely by the good orders for manufacturers' wire. Bolt and nut plants, fabricators and manufacturers of products taking plain bright wire and several chain interests maintain wire mill production at a good level. A local chain manufacturer has advanced working days to four and a half weekly. Nails are fairly quiet by contrast, though wire rods have come in for their share of the tonnage. Prices are unchanged at the levels prevailing for some time, with the usual asking prices of $2 a ton higher quoted on most business, but not always successfully.

Nut, Bolt, Rivet Buying Shows Slight Gain

Bolts, Nuts, Rivets Prices, Page 63

Pittsburgh — Specifications for bolts, nuts and rivets are fairly steady and show a slight gain over a month ago. Orders are in small lots with no increase in demand from railroads. Less unsteadiness in prices is noted, the market continuing 73 off for bolts and nuts and 2.75c, Pittsburgh, for structural rivets.

Philadelphia—Philadelphia Rapid Transit has placed 40 tons of spikes and Trenton, N. J., 40 tons of bolts and dock spikes for the municipal pier, both orders reported going to a northern New Jersey mill.

Cleveland—Recent rumor in this district of two 10's discount from the list price of bolts of 73 off has been discredited and the price continues unchanged. Bolt and nut commitments for material are in sustained volume.

Chicago — Shipping orders for bolts, nuts and rivets are falling slightly under April. Aside from automotive demand, consumers had no specifications of consequence. Large structural rivets remain steady at 2.85c, Chicago, despite light demand from the building industry. Producer operations are unchanged at about 40 per cent.

Lighthouses Need Steel

New York—United States Chain & Forging Co., McKees Rocks, Pa., is low on 144 units of 15-fathom pieces, ¾ to 1½-inch open link iron buoy chain, bids being opened by the superintendent of lighthouses, Staten Island, this week. Total weight of the chain is 155,000 pounds.

Pulaski Foundry & Mfg. Co., Pulaski, Va., is low on nine bell buoys, 15 feet long, nine feet diameter with skeleton steel ball frame and botton counterweight, total weight of the buoys being 77,400 pounds.

Sweet & Doyle Foundry & Machine Co., Troy (Green Island), N. Y., is low on 16 cast iron sinkers, each with forged mooring eye cast in, total weight being 80,000 pounds.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	19.91 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00 to 13.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.00 to 17.25
Buffalo fur., local del.	17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 27.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50
Connellsville foundry	3.25 to 4.75
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	7.50
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	9.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.00 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$30.00
Pittsburgh, bessemer	30.00
Youngstown	30.00
Cleveland	30.00
Philadelphia	35.30
Chicago	31.00
Forging, Chicago	36.00
Forging, Pittsburgh	36.00
Forging, Philadelphia	40.30

SHEET BARS

Pittsburgh	29.00 to 30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00
Chicago	31.00

SLABS

Pittsburgh	30.00
Youngstown	30.00
Cleveland	30.00

WIRE RODS

Pittsburgh, Cleveland	35.00 to 37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.60c to 1.65c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

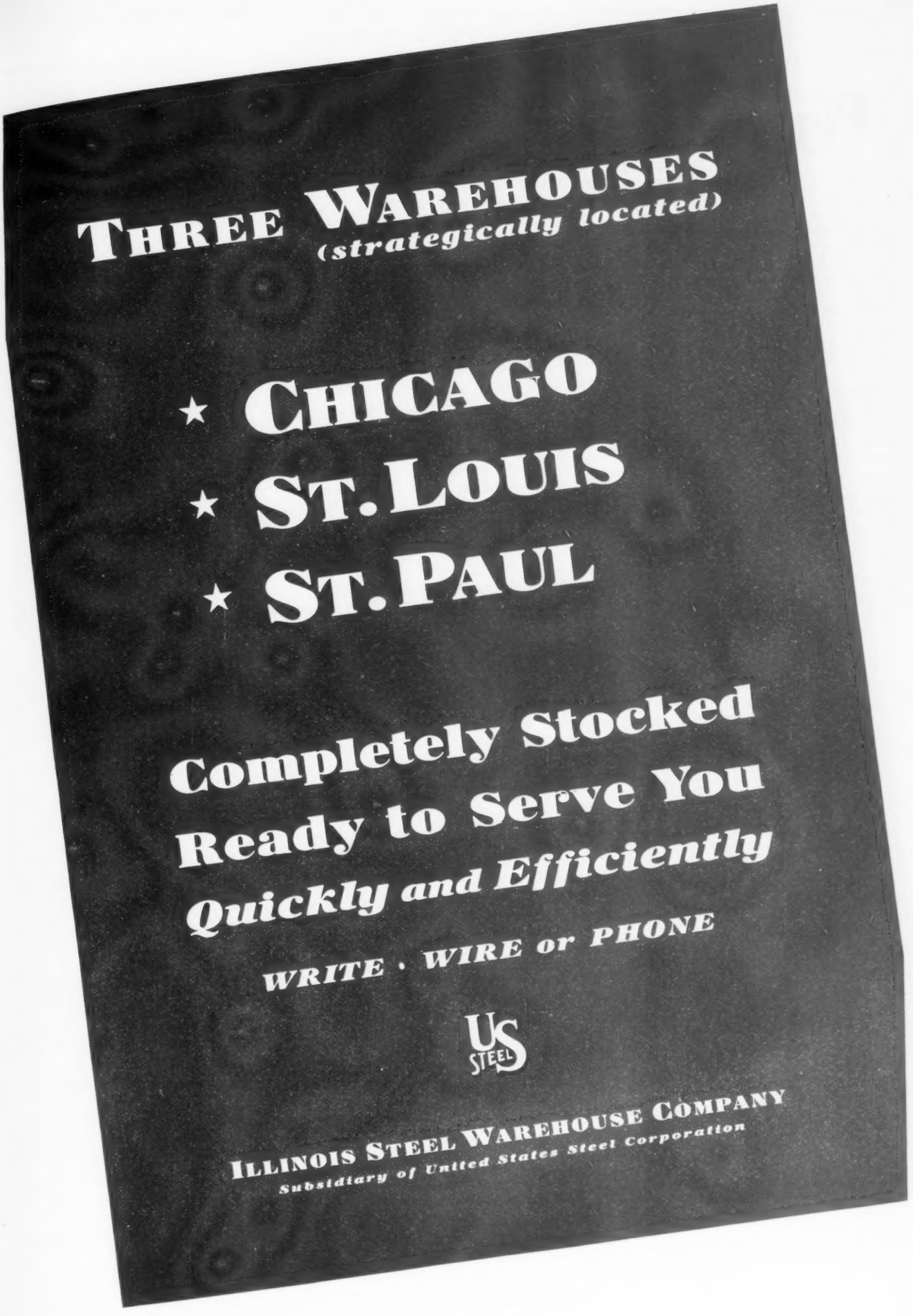
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.50 to 14.00
Washed gravel, import duty paid east, tide, gross ton	19.00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Pig Iron

Buffalo Price Down 50 Cents—Eastern Pennsylvania Market Easier—Current Sales Light

PIG IRON PRICES, PAGE 74

Pittsburgh—Business in the pig market continues as light or lighter than during the past several weeks. Shipments also are declining, resulting in some increase in stocks. Orders usually are limited to carload lots. No new inquiry is appearing. Prices are nominal at $17, base, valley, for No. 2 foundry and malleable, basic and bessemer.

Boston—The market is quiet, less than 1000 tons having been sold in the New England district in the past week. Prices of the higher silicon grades appear a little easier.

New York—Sales of pig iron have improved slightly, aggregating 3500 tons in the past week. Inquiry is comprised of small lots. Prices are unchanged. Witherbee, Sherman & Co. have blown in their blast furnace at Port Henry, N. Y.

Philadelphia — Eastern Pennsylvania pig iron prices are easier. No. 2 foundry now generally is $17.26, delivered, Philadelphia, $17.76 having disappeared. Southern iron is unchanged at $16.25, delivered, Philadelphia docks. Pilling & Co. are low bidders on 224 tons of copper-bearing low phosphorus iron for the navy. Lorain Steel Co. is inquiring for 1000 tons of copper-bearing low phosphorus for its Johnstown, Pa., plant. The largest traffic is in Indian iron, 4500 tons having been received here in the first week in May and 8500 tons in April. Most of this iron is on an old contract with one consumer. The Alan Wood Steel Co. will suspend operations at its Scrub Oak iron ore mine in New Jersey and blow out the only blast furnace it has in operation June 1. The Lavino Furnace Co. has blown out its ferromanganese furnace at Ruesens, Va.

The Newport News Shipbuilding & Dry Dock Co. has placed 510 tons of No. 1 iron with a Port Henry, N. Y., furnace.

Buffalo—Furnace interests here have reduced pig iron prices 50 cents a ton for delivery in this district. This is the third price reduction for the district in 17 months, the total amounting to $2.50. No. 2 foundry now is $17 and malleable $17.50, furnace. Prices lower than these apply on orders from eastern competitive districts. About 7000 tons was booked in the past week.

Youngstown, O.—Small-lot buying continues in the pig iron market. When ingot mold foundries are in operation the movement of hot metal absorbs the output of the tributary blast furnaces. Pig iron stocks are not accumulating unduly as such furnaces bank promptly when the movement stops. No. 2 foundry, malleable, bessemer and basic hold at $17, valley furnace.

Cleveland—Deliveries to automotive and sanitary ware manufacturing plants have improved moderately, agricultural implement and other lines continuing slow. The aggregate of sales booked by furnace interests with headquarters in Cleveland increased during the past week to 13,000 tons. Westinghouse Electric & Mfg. Co. was to close this week for requirements at Cleveland and Trafford City, Pa. Current inquiries are restricted to immediate requirements; no heavy buying for second quarter has occurred at one time. No. 2 foundry and malleable hold at $17, base, Cleveland furnace, for local delivery, and $16 to $17, lake furnaces, for competitive territory in western and southern Ohio and in Indiana.

Cincinnati—The total of pig iron sales in this district in the past week declined somewhat from the recent average of 2000 tons. Only small lots in demand. Southern iron remains $11, base, Birmingham, with no concessions on differentials. Inquiries are light.

The Jackson Iron & Steel Co. is reported to have blown out its furnace at Jackson, O.

Chicago—Pig iron shipping orders from jobbing foundries are slow. Automotive and stove foundries have moderately heavy schedules. Northern iron prices remain $17.50, base. A recent order for silvery iron in this market was closed at $2 under quoted schedules.

St. Louis—The daily average melt since May 1 has been slightly higher than in the last half of April. Some new sales are reported, mainly small lots for prompt delivery. Inquiries are unusually small. Prices are unchanged.

Toronto, Ont.—Demand for merchant pig iron has slowed, and makers indicate that unless there is an early revival production will be curtailed. Individual sales in the past week were less than 100 tons, and the total was under 900 tons.

Birmingham, Ala.—The volume of sales continues below production but additions to stockpiles so far are not alarming and no plans have been made for curtailing output. The base price is held at $12 to $13 for delivery in this district; prices elsewhere depend on point of delivery and competition, generally $11, base, furnace.

Ferroalloys Moving at Slow Rate; Prices Steady

Ferroalloy Prices, Page 74

New York—The market for ferromanganese is quiet at $85, duty paid, for carloads. Domestic spiegeleisen, 19 to 21 per cent, is nominal at $30, furnace. Shipments of special ferroalloys are slow, in keeping with the slack steel mill operations. Practically all business is against contracts and prices are unchanged. Tungsten ore is dull and unchanged.

Pittsburgh—Shipments of most grades of ferroalloys continue to lag. Specifications for ferromanganese and spiegeleisen are at the quiet rate of steelmaking operations. Spot buying is dull with small lots quoted $89.79, delivered, for ferromanganese and $30, furnace, for spiegeleisen. Ferrotungsten usually is $1.10 to $1.15.

Iron Ore Inquiries Small; Vessel Rates Renewed

Iron Ore Prices, Page 74

Cleveland—The market for Lake Superior iron ore continues quiet. A few inquiries are pending, the total under 100,000 tons. Open market sales this year, including the Ford Motor Co.'s purchase of 200,000 tons probably will be less than 500,000 tons. Some operators say their associated interests have not fully indicated how much ore they will require. Vessel rates for iron ore and coal have been reaffirmed on the 1930 basis, as anticipated, following the re-establishment of last year's ore prices.

Fluorspar More Active

Fluorspar Prices, Page 74

New York—A slight improvement is noted in demand for fluorspar. The price continues $19, duty paid, per gross ton.

Takes Steel Wheel Bids

New York—Pennsylvania railroad takes bids May 20 at Philadelphia on steel wheels, under contract 15.

Scrap

Prices Whittled Further as Melters Resist—Melt Increases as Reserves Are Utilized

Chicago—Further buyers' resistance and added unfavorable factors in the steel scrap market have brought heavy melting steel down another 25 cents, despite attempts to hold the market at or above $9. The range now is $8.75 to $9.25 on the strength of a moderate sale at the top of the spread. Dealer and broker trading is at $8.75 and up. Minor adjustments are being made in other grades, chiefly foundry scrap. Car wheel scrap, malleable and rerolling rails also have weakened about 25 cents, due to light foundry orders and forced liquidation of some speculative stocks. A fairly heavy movement of scrap occurs, despite well regulated deliveries to large melters, whose yards are overcrowded. Some distress scrap moves to dealer yards

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	9.00 to 10.50
Boston, dealers	5.25 to 5.50
Buffalo, No. 1	10.25 to 10.50
Buffalo, No. 2	8.75 to 9.25
Chicago	8.75 to 9.25
Cinci., deal.	8.75 to 9.25
Cleve., No. 1	9.75 to 10.00
Cleve., No. 2	9.25 to 9.50
Det., No. 1 deal.	8.25 to 8.75
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	9.00 to 10.00
N. Y. deal. R. R.	6.00 to 7.00
N. Y. deal. No. 2	5.00
N. Y, deal. yd.	5.00
Pitts., No. 1	11.00 to 11.50
St. L. No. 1 sel.	8.50 to 9.00
Federal, Ill.	8.25 to 8.75
Granite City, Ill.	7.75 to 8.25
Valleys, No. 1	11.25 to 11.75

COMPRESSED SHEETS

Buffalo, dealers	8.75 to 9.25
Chicago	7.00 to 7.50
Cleveland	8.50 to 8.75
Detroit, dealers	8.00 to 8.50
E. Pa. new mat.	9.00 to 10.00
Pittsburgh	11.00 to 11.50
Valleys	10.75 to 11.25

BUNDLED SHEETS

Buffalo	6.50 to 7.00
Cinci., deal.	8.25 to 8.75
Cleveland	7.00 to 7.25
Eastern Pa.	8.00 to 8.50
Pittsburgh	9.00 to 9.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.75 to 5.25
Detroit, dealers	4.50 to 5.00
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	4.00 to 5.50
Buffalo	13.75 to 14.25
Chicago (3 ft.)	10.50 to 11.00
Chicago (2 ft.)	11.25 to 11.75
Cinci., deal	13.25 to 13.75
Detroit, deal.	11.50 to 12.00
Pitts. (open-hearth, 3 ft and less)	14.00 to 14.50
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.50 to 8.00
Boston, con.	5.00 to 5.50
Buffalo	8.00 to 8.50
Chicago, net	7.00 to 7.50
Cinci., deal. net	5.00 to 5.50
Det., net deal.	5.50 to 6.00
Eastern Pa.	8.50
N. Y., deal. mill	4.75
St. Louis	7.00 to 7.50

COUPLERS, SPRING

Buffalo	12.50 to 13.00
Chicago	10.00 to 10.50
Eastern Pa.	15.50 to 16.00
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

ANGLE BARS—STEEL

Chicago	9.75 to 10.25
St. Louis	8.00 to 8.50

LOW PHOSPHORUS

Buff., billets and bloom crops	14.00 to 14.50
Cleveland bil. and bloom crops	13.50 to 14.00
Eastern Pa.	15.50 to 16.00
Pittsburgh billet bloom crops	16.00 to 16.50
Pitts. sheet bar crops	14.50 to 15.00

FROGS, SWITCHES

Chicago	9.50 to 10.00
St. Louis	9.00 to 9.50

SHOVELING STEEL

Chicago	8.75 to 9.25
Cleveland	6.25 to 6.75
St. Louis	8.00 to 8.50

RAILROAD WROUGHT

Birmingham	8.00 to 9.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	8.00 to 8.50
Buffalo, No. 2	10.25 to 10.50
Chicago, No. 1	8.50 to 8.95
Chicago, No. 2	8.75 to 9.25
Cinci., No. 2	8.75 to 9.25
Eastern Pa.	11.00
N. Y., No. 1, deal.	9.50 to 10.00
Pitts., No. 2	11.00 to 11.50
St. Louis, No. 1	6.50 to 7.00
St. Louis, No. 2	8.25 to 8.75

SPECIFICATION PIPE

Boston	5.00 to 5.50
Eastern Pa.	11.50 to 12.00
N. Y., deal.	625 to 675

BUSHELING

Buffalo, No. 1	8.75 to 9.25
Chicago, No. 1	7.00 to 7.50
Cinn., No. 1 dl.	7.00 to 7.50
Cinn., No. 2	4.00 to 4.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	10.00 to 10.50

MACHINE TURNINGS

Birmingham	6.00 to 6.50
Boston, dealers	2.00 to 2.25
Buffalo	4.75 to 5.00
Chicago	3.75 to 4.25
Cinn., deal.	4.50 to 5.00
Cleveland	5.25 to 5.50
Detroit	3.00 to 3.50
Eastern Pa.	6.00 to 6.50
N. Y., deal.	3.00
Pittsburgh	7.00 to 7.50
St. Louis	4.00 to 4.50
Valleys	7.00 to 7.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	1.75 to 2.00
Buffalo	5.50 to 6.00
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	6.00 to 6.50
N. Y., deal.	3.00
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	6.00 to 6.50
Boston, chem.	7.00 to 8.50
Boston, deal.	2.00 to 2.25
Buffalo	5.50 to 6.00
Chicago	3.75 to 4.25
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	6.50 to 7.00
E. Pa., chem.	13.50 to 14.00
N. Y., deal.	3.00
Pittsburgh	7.50 to 8.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	7.50 to 8.00

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	6.00 to 6.50
Cincinnati	6.00 to 6.50
Eastern Pa.	8.50
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal	5.00 to 5.25
Buffalo	9.00 to 9.50
Cleve. ov. 10 in.	7.25 to 7.75
Detroit	6.50 to 7.00

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.50 to 12.00
Eastern Pa.	10.00 to 10.50

ARCH BARS, TRANSOMS

Chicago, net	10.50 to 11.00
St. Louis	9.75 to 10.25

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	9.25 to 9.75
Chi., steelworks	7.50 to 8.00
Cleveland	8.00 to 8.50
Eastern Pa.	10.50 to 11.00
Pittsburgh	9.25 to 9.75
St. Louis	7.00 to 7.50

STEEL CAR AXLES

Birmingham	13.00 to 13.50
Boston, ship. pt.	11.00 to 12.00
Buffalo	15.50 to 16.00
Chicago	13.45 to 14.00
Eastern Pa.	18.50 to 19.50
St. Louis	12.00 to 12.50

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	9.55 to 10.10
N Y., deal.	12.00 to 13.00
St. Louis	10.25 to 10.75
E. Penna.	18.00

CAR WHEELS

Birming., iron	10.00 to 10.50
Boston, iron	14.00 to 14.50
Buffalo, iron	12.00 to 12.50
Buffalo, steel	12.50 to 13.00
Chicago, iron	9.25 to 9.75
Chi., roll steel	11.50 to 12.00
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	13.00
E. Pa. iron	12.50 to 13.00
Pitts., iron	12.00 to 12.50
Pitts., steel	14.00 to 14.50
St. Louis, iron	7.50 to 8.00
St. Louis, steel	10.50 to 11.00

NO. 1 CAST SCRAP

Birmingham	9.50 to 10.25
Buffalo (mach.)	10.50 to 11.00
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	12.00 to 12.50
Det., net deal.	8.50 to 9.00
E. Pa. cupola	13.00
N. Y. cup deal.	8.00 to 8.50
N. Y., del. local foundries	12.00
Pitts., cupola	11.50 to 12.00
San Fran., del.	13.50 to 14.00
Seattle	7.50 to 8.00
St. L. No. 1 ma.	9.00 to 9.50
St. L. No. 1	8.50 to 9.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast.	11.50 to 12.50
Buffalo, break	7.00 to 7.50
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	6.50 to 7.00
Eastern Pa.	11.00
N. Y. No. 1 dl.	7.25 to 7.75
N. Y. break. dl.	7.00 to 7.50
Pittsburgh	8.50 to 9.00

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	11.50 to 12.00
Chicago, agri.	9.00 to 9.50
Chicago, R. R.	9.50 to 10.00
Cinn., R. R. dl.	11.50 to 12.00
Cinn, agri., dl.	12.00 to 12.50
Cleveland, rail	12.00 to 12.50
Det. auto deal.	10.50 to 11.00
St. Louis, rail	8.25 to 8.75

RAILS FOR ROLLING
5 feet and over

Birmingham	10.25 to 10.75
Boston	7.50 to 8.00
Buffalo	10.75 to 11.25
Chicago	11.00 to 11.50
Eastern Pa.	12.50 to 13.00
New York	8.25 to 8.75
St. Louis	10.25 to 10.75

LOCOMOTIVE TIRES

Chicago, cut	11.50 to 12.00
St. L., No. 1	10.50 to 11.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	14.00 to 14.50
Eastern Pa.	14.50 to 15.00
Pittsburgh	14.50 to 15.00

AN EXCELLENT BUILDING
ON A NOTABLE SITE

IRVING TRUST COMPANY
Headquarters
No. 1 Wall Street
New York, N. Y.

Voorhees, Gmelin & Walker - *Architects*

H. G. Balcom - - *Structural Engineer*

Marc Eidlitz & Son - - - *Builders*

The

STEEL FRAME

in this attractive tall building—situated on a prominent corner in New York City—consisting of CB sections, columns, beams, plate girders, bracing, grillages and miscellaneous members, was furnished and fabricated by

AMERICAN BRIDGE COMPANY
Subsidiary of United States Steel Corporation

Manufacturers of

STEEL STRUCTURES

of all classes particularly

BRIDGES and BUILDINGS

General Offices – 71 Broadway, New York, N. Y.

Contracting Offices:

New York	Baltimore	Cincinnati	St. Louis
Boston	Pittsburgh	Detroit	Duluth
Philadelphia	Cleveland	Chicago	Minneapolis
	Denver	Salt Lake	

US STEEL

Pacific Coast Distributor
Columbia Steel Company, San Francisco Calif.

Export Distributor
United States Steel Products Co., 30 Church St., New York, N. Y.

at bargain prices. The gain in steel scrap consumption, from the tapping of cold metal reserves, has had little effect. Several melters are cutting down their pig iron melt in view of their heavy accumulations of low-priced scrap.

Boston—Steel and iron scrap prices receded further in this territory last week. Stove plate, which has held fairly well, was easier for New England delivery. The American Steel & Wire Co. at Worcester has ceased buying, having been a fairly good consumer for some time. The Boston & Maine railroad will close bids May 13 on 43 cars of miscellaneous scrap.

New York—Dealers' prices are lower. No. 1 steel is off 50 cents to $6, the inside figure in the range. This grade is now $9.50, delivered, eastern Pennsylvania, although price weakness has not stimulated buying. Purchasing is generally limited by mills to a few hundred tons per shipment

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

and even such orders are not numerous. Movement of scrap to the Buffalo district by barge holds up well with $7.50 paid for No. 1 and $6.25 for No. 2 in some instances. Skeleton has sold $7.50 delivered in this territory and No. 1 machinery at $10.50. Dealers' buying prices are lower on most grades. Cast and machinery, rails for rolling, shafting, specification pipe, steel yard and skeleton steel.

Philadelphia—Scattered buying of steel and iron scrap includes 100-ton purchases of No. 2 melting steel for Harrisburg and Pencoyd, Pa. Bethlehem Steel Co. is holding up shipments of unprepared scrap to Steelton, Pa. No. 1 heavy melting steel has been marked down to $9 to $10, delivered, on a purchase of 2000 tons by Bethlehem Steel Co.

Buffalo—An.. additional sale of heavy melting steel, probably 3000 to 5000 tons, has been made for delivery at Lackawanna. The price was $10.50 for No. 1 and $9 for No. 2. This equals the lowest purchase prices of this year. The local market is weak and unsteady with dealers finding difficulty in getting outlets for material of any sort. It is reported a small lot of stove plate has been sold for local delivery at $8.25.

Pittsburgh—Prices of steel and iron scrap are off slightly following the sharp drop of a week ago. It is understood the Pennsylvania railroad disposed of part of the heavy melting steel and rails on its recent list at about $11.50 for the former, making the market $11 to $11.50, which is 25 cents under the previous quotation. Several other grades, including railroad specialties, are quotably lower. Some sales of blast furnace grades have been made at $7.75 and less, but in view of the large short interest the market is unchanged at $7.50 to $8.

Cleveland—A local steelworks has placed an order for a moderate tonnage of machine shop turnings, paying between $5.50 and $6 a ton. This is the first scrap purchased by this interest in the open market in approximately 18 months. The quotation on turnings has advanced 75 cents to $1 a ton. Previously the only important outlet for turnings produced in this district was in the Pittsburgh market and the quotation was governed accordingly. A second steelworks continues to receive steel scrap on a storage basis. Otherwise movement of scrap in this district is moderate. Only a few carlots are moving to out-of-town consumers.

Detroit—Prices of steel and iron scrap are unchanged in this district, apparently on the bottom, though no strength is shown. Some consuming outlets have curtailed needs, thus limiting demand for some grades.

Cincinnati—Heavy melting steel and several other grades of iron and steel scrap show weakness. New business continues light.

St. Louis—With slow demand from all classes of users the trend of iron and steel scrap prices continues downward. Specific reductions the past few days have brought prices of several items to lowest levels since the World war. Steel specialties and heavy melting steel are particularly weak. Car wheels, which are in overabundant supply, were cut 50 cents per ton to a minimum of $7.50.

Birmingham, Ala.—Steel and iron scrap continues dull, with heavy melting steel the only grade showing activity, and that moderate.

Toronto, Ont.—Slowing down in demand is reported for iron and steel scrap in the Canadian markets. Heavy melting steel and turnings are moving slowly, with mills taking small lots of special grades. Iron grades are fairly active with most demand for machinery cast.

Coke

Movement of By-Product Foundry Fuel to Automotive Industry Gains—Beehive Quiet

COKE PRICES, PAGE 74

Pittsburgh—Beehive coke shipments are declining slowly. Furnace requirements are fairly steady but foundry demand is moderating slightly. Prices are unchanged at $2.50 for the furnace grade, and $3.25 to $4.75 for foundry fuel.

Boston—Domestic coke continues in fair demand. The market for foundry grades is dull.

New York—A buyer's market continues in coke. Beehive furnace coke is easy at $2.25, Connellsville, Pa. Standard beehive foundry coke is moving generally at $3.25, Connellsville, although some sellers are endeavoring to hold to $3.50. Premium brands are $4.70 to $4.85, Latrobe, Pa. By-product coke is $9 to $9.40, Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Demand for by-product foundry coke has improved in some directions. Domestic grades are dull.

Chicago—By-product foundry coke shipments into the Michigan automotive territory are gaining. One seller reports an increase of 25 to 30 per cent this month. Contracts have been revised downward to the new price of $7.50, ovens, and $8.25, delivered Chicago.

St. Louis—Shipments of metallurgical coke have increased slightly since May 1. New orders are small. Moderate improvement in demand for bituminous coal is reflected in the reopening of a number of mines in the adjacent Illinois fields.

Birmingham, Ala.—A slight reduction in foundry coke consumption is noted in this district. Output, however, has not been curtailed.

Pacific Coast

Bids on 35,000 Tons of Pipe Postponed—1000 Tons Plates for Pipe Line Awarded—Cast Pipe Needs Smaller Than Usual —Small Lots Rule in All Products—Public Building Aids

San Francisco—(*By Air Mail*)—General business conditions on the Pacific Coast have shown little improvement in the past month. Demand for steel products remains relatively quiet. Most sales and inquiries are confined to unimportant tonnages. The largest award of the week involved 1000 tons of plates for a pipe line in San Francisco, booked by the Consolidated Steel Corp., Los Angeles.

Bars, Plates and Shapes

While awards of concrete bars were numerous only one lot of over 100 tons was noted. This called for 300 tons for an apartment in Los Angeles, placed with an unknown company. Awards so far this year aggregate 21,013 tons, as compared with 15,610 tons for the corresponding period in 1930. No award has yet been made on 4000 tons for the Sixth street bridge, Los Angeles. Bids will be opened May 20 for 420 tons for the Sloat boulevard viaduct, San Francisco, and on 114 tons for an undergrade crossing in San Mateo county, Calif. Bids on 255 tons for the Hetch Hetchy pipe line have been postponed from May 6 to May 20. New inquiries include 350 tons for a hotel in Phoenix, Ariz., and 200 tons for a library in Claremont, Calif. Out-of-stock prices in the Los Angeles district are firm at 2.50c, base, while San Francisco district quotations hold at 2.60c.

Plate business totaled 1344 tons, bringing the aggregate for the year to 64,297 tons, compared with 22,279 tons for the same period last year. In addition to the 1000 tons mentioned above, 344 tons for a 12 to 16-inch welded steel pipe line in the Kettleman Hills district was booked by the Western Pipe & Steel Co. Bids will be opened May 13 in Washington for two floating derricks calling for 200 tons of plates. One of these derricks is for Mare Island and the other for San Diego. Bids on the Hetch Hetchy pipe line, San Francisco, involving 35,000 tons, have been postponed from May 6 to May 20. Prices remain at 2.60c, c.i.f.

Demand for structural shapes has shown little improvement and most of the business being booked is in small lots. Awards aggregated 2048 tons, bringing the total for the year to 40,618 tons, compared with 36,064 tons for the corresponding period in 1930. Consolidated Steel Corp. booked 200 tons for the Mutual State building, Los Angeles. Minnesota Moline Power Implement Co. took 500 tons for the Kress store, Sacramento, and 300 tons for a school in Santa Barbara, Calif. Bids have been opened on 114 tons for a bridge over the Trinity river, California. Herrick Iron Works was low bidder on 175 tons for the Oakland port commission warehouse. Prices range between 2.05c and 2.15c, c.i.f.

Other Finished Material

Movement of cast iron pipe is practically at a standstill and no awards were reported this week. Bookings to date total 31,931 tons, compared with 40,456 tons for the same period a year ago. San Diego opened bids on 100 tons of pipe for the improvement of Addison street. Bids have been opened on 992 tons of 2 to 12-inch pipe for the Hoover dam project, Denver. No new inquiries of importance came up for figures during the week.

Consumers of sheets continue to buy in small lots for quick delivery. Prices remain unchanged at 2.50c, base, c.i.f., for blue annealed; 3.00c for black sheets, and 3.50c for galvanized sheets.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Fabricators Fairly Busy

Seattle — While public works awards feature construction activities in the Pacific Northwest, no large tonnages of steel are involved. For this reason no large steel contracts have recently developed and orders are below normal. Bids for the Marine hospital, Seattle, involving about 1000 tons of reinforcing and 100 tons of shapes, will be opened May 18. The largest structural jobs in prospect are for the federal building and University bridge approaches, Seattle, the latter about 2000 tons.

There is no improvement in foundry operations, many plants being idle or operating at part capacity. Buying of materials is at a minimum and no upturn is anticipated before late summer. Spring business has been exceedingly light due to restricted cannery and logging operations.

Bars, Plates and Shapes

Demand for both merchant and concrete bars is slow and no important tonnages are up for figures. Local mills have booked a few small orders. Pioneer Sand & Gravel Co. has a small concrete job involved in the Washington Co-operative Egg & Poultry association plant at Issaquash, Wash.

Willamette Iron & Steel Works, Portland, Oreg., was low bidder for constructing four steel hulls, involving 120 tons of plates, for the United States engineers. Award of 135 tons of sheet steel piling for a cofferdam at the Seattle Ford assembly plant has gone to German producers. Seattle has opened bids for a reservoir project, low bidder $384,359, involving a small tonnage of riveted or lockbar pipe, 1100 of 24-inch. Aberdeen, Wash., is still considering bids for the Washkah water system improvement. The project involves 20,300 feet of 28-inch pipe, steel, cast iron or wood. For steel, Steel Tank & Pipe Co., Portland, was low on about 1600 tons at $84,110.

Local fabricating plants have considerable work on books, but no new projects of importance have developed and few jobs are up for figures.

Pacific Coast Steel Corp., Seattle, has awarded to the Judson-Pacific Co. the contract to construct a 10-ton, 84-foot span, two-trolley crane, involving about 60 tons of steel. This equipment is for Seattle warehouse now under construction.

Finished Materials

Jobbing houses report no improvement, demand being confined to small orders for quick delivery. The usual spring activity is lacking. No item is moving actively. Recent price reductions, to adjust to mill schedules, have not stimulated buying.

Pipe Demand Is Slack

Business has been slack for some time as municipal requirements have been generally covered since the first of the year.

However, this week somewhat increased inquiry from industrial sources is apparent and manufacturers' agents expect improvement. Some small lots are being filled direct from stock.

The government has opened bids for 6000 feet of 6-inch cast iron, 75 tons, for the LaPush Indian reservation. Shelton, Wash., will open bids this week for a small lot of 6-inch cast iron pipe and accessories.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized. Direct mill shipments, base minus two 5's.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 46.00 to 48.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 35.50 to 37.50
Four-inch, New York ..... 39.50 to 40.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	3.10c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	3.90c
Clev.***	3.75c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†	3.50c
Pitts.**	3.35c to 3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.95c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.40c-4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.40c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los Ang.	5.10c
New York	4.00c-4.10c
Phila.*†	3.95c
Pitts.**	3.90c to 4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.40c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	4.10c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 5½c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

1. CONTROLLED STRUCTURE –
2. "B" BOND –

Two Reasons for Greatly Improved CENTERLESS GRINDING

Controlled Structure*—definite regulation of the amount and spacing of the abrasive grain in a wheel.

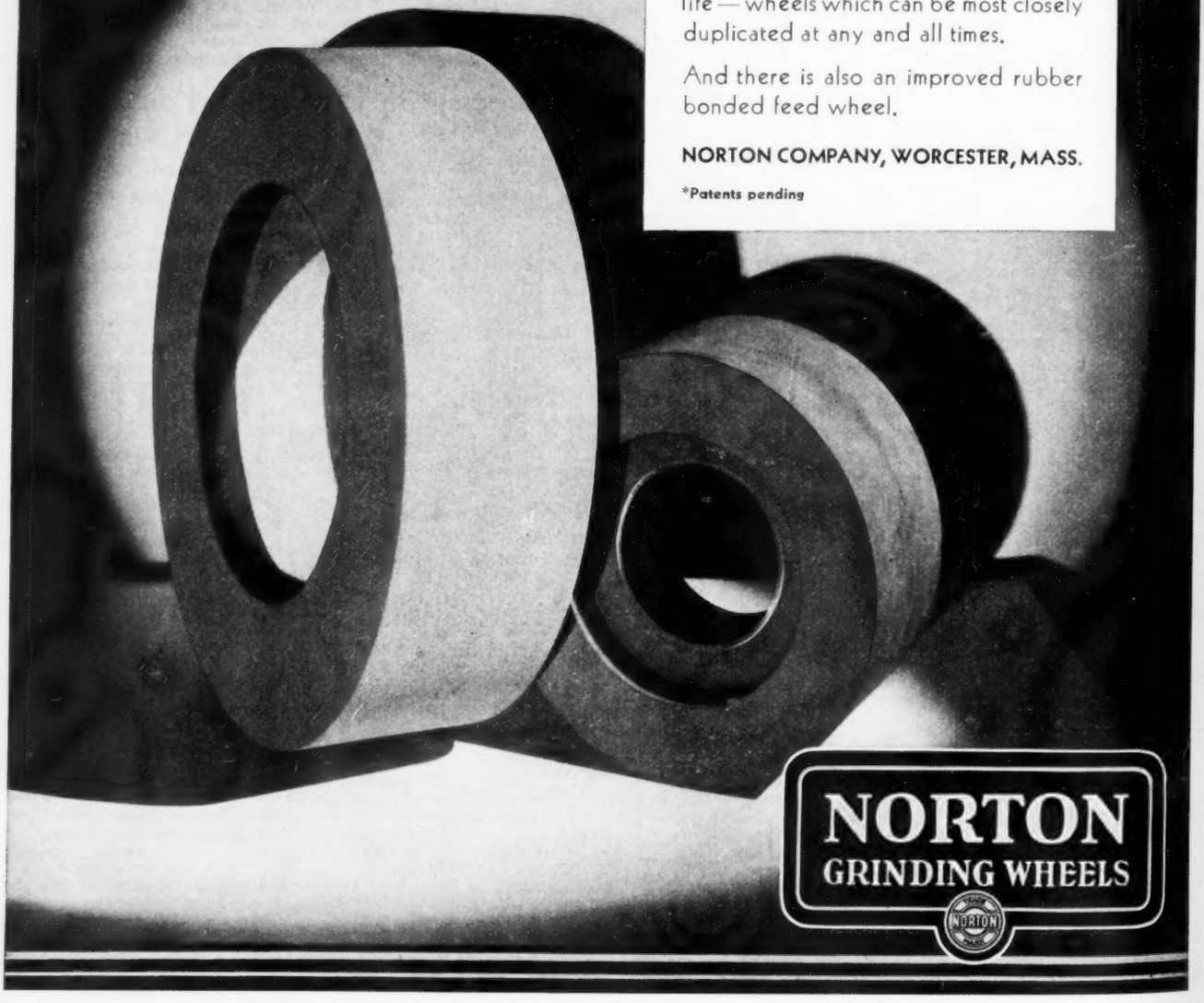
"B" Bond*—an entirely different, more stable, more scientific vitrified bond.

Two exclusively Norton developments which produce wheels especially suited to the exacting requirements of centerless grinding—wheels which can be most exactly fitted to specific jobs; giving rapid, free cutting action and long life—wheels which can be most closely duplicated at any and all times.

And there is also an improved rubber bonded feed wheel.

NORTON COMPANY, WORCESTER, MASS.

*Patents pending



NORTON
GRINDING WHEELS

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 9.50c, Conn., for copper

Sheets	
Yellow brass (high)	16.75
Copper, hot rolled	19.37½
Lead, full sheets (cut ½c more)	8.00
Zinc sheet (100-lb. base)	8.75
Tubes and Pipes	
Seamless yellow brass (high)	21.62½
Seamless copper	21.87½
Rods	
Yellow brass (high, full turnings)	15.00
Naval brass	16.00
Anodes	
Copper, untrimmed	16.87½
Wire	
Yellow brass (high)	17.25

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass		
New York	5.75 to	6.00
Chicago	5.25 to	5.75
Cleveland	5.75 to	6.25
St. Louis		5.75
Heavy Yellow Brass		
New York	4.00 to	4.25
Heavy Copper and Wire		
New York	6.75 to	7.00
Boston	6.50 to	6.75
Chicago	6.50 to	6.75
Cleveland	6.00 to	6.25
St. Louis	6.00 to	6.25
Red Brass Borings		
New York	5.50 to	5.75
Yellow Brass Tubing		
Cleveland	3.50 to	4.00
Light Copper		
New York	6.00 to	6.25
Chicago	5.25 to	5.75
Cleveland	5.00 to	5.50
St. Louis		5.50
Light Brass		
Boston	2.75 to	3.00
Chicago	3.00 to	3.25
Cleveland	2.50 to	3.00
St. Louis	3.00 to	3.25
Zinc		
New York		1.25
Cleveland	1.00 to	1.25
St. Louis		1.25
Aluminum		
Clippings, soft, Cleveland	11.50 to	12.00
Clippings, hard Cleveland	9.25 to	9.75
Borings, Cleveland	4.00 to	4.50
Mixed cast, Cleveland	4.50 to	5.00
Mixed cast, Boston	4.00 to	4.50
Mixed cast, St. Louis		4.50

Secondary Metals

Remelt aluminum No. 12	10.00
Brass ingots, 85-5-5-5	9.00

Metals

Slack Business Continues to Depress Market Values — Lead Falls ¼-Cent During Week

New York—Slack business continues to send nonferrous metal prices to new low levels. Lead has been the outstanding metal of depression in the past week, with another ¼-cent drop. Zinc has been a little more steady after falling to 3.25c, East St. Louis. Copper has remained at a minimum of 9.00c, and tin has lacked any definite trend.

Brass and copper mill products remain unchanged on the basis of 9.50c for copper. Some buying interest is shown in mill products for protection in case of a stronger copper market, but this is for future requirements. There is no indication of an improvement for current consumption.

Copper—Metal at 9.00c, Connecticut, has become scarce in the past few days with general asking price by custom smelters 9.25c and by producers 9.50c. Buyers have not been getting all metal desired, but they have preferred to delay purchases rather than pay more at present. Export as well as domestic business has been extremely light. April statistics showed an increase of 8781 tons in total refined and blister stocks. Refined stocks alone amounted to 13,716 tons while refined deliveries fell to 2893 tons daily, or the lowest rate in one year. Production advanced 58 tons daily.

Zinc—At 3.25c, East St. Louis, prime western has shown a little more resistance. New business has been extremely light, but most sellers have been reluctant to meet the low price except to retain customers. Most sellers asked a premium of five points for deliveries beyond two months. April statistics showed an increase of about 1700 tons in stocks to a total of more than 143,000 tons. Shipments were the smallest in nine years and about half of the 1929 monthly volume.

Tin—The market has been a little more steady around 23.00c, but without activity and with no convincing evidence of stability. Stocks in England continue to rise rapidly.

Lead—Dull business and continued increase in stocks have forced this market to the lowest price since 1915.

Aluminum—New business is quiet but prices unchanged.

Coke By-Product Prices Steady; Sulphate Active

New York — Toluol sales have picked up slightly. Benzol demand is steady, despite low gasoline prices. Most sales of toluol and benzol are made at 27.00c and 19.00c, respectively. Solvent naphtha and xylol are unchanged in demand and price. Sulphate of ammonia is slightly more active. Phenol buying is spotty and prices are inclined to be easier. Spot shipments of naphthalene are seasonally satisfactory, the drug trade taking a good part of current output. Prices are steady.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.19 to 0.20
90 per cent benzol	0.19 to 0.20
Toluol	0.27 to 0.29
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.80 to $1.90

Steam Hoists Are Awarded

Vicksburg, Miss—Clyde Iron Works Sales Co., Duluth, Minn., has been awarded two double cylinder steam hoists by the U. S. engineer at this station with a bid of $3850.

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
May 6	9.00	9.62½	8.87½	23.40	23.75	4.00	3.80	3.25	22.90	6.62½	35.00
May 7	9.00	9.62½	8.87½	23.35	23.70	4.00	3.80	3.25	22.90	6.62½	35.00
May 8	9.00	9.62½	8.87½	23.25	23.50	3.85	3.65	3.25	22.90	6.62½	35.00
May 9	9.00	9.62½	8.85	23.25	23.50	3.85	3.65	3.25	22.90	6.62½	35.00
May 11	9.00	9.62½	8.85	23.20	23.50	3.75	3.60	3.25	22.90	6.62½	35.00
May 12	9.00	9.62½	8.85	23.20	23.45	3.75	3.60	3.25	22.90	6.60	35.00

Europe

Competition Grows Sharper—British Firm to Build Soviet Blast Furnace—Output Down

London—(*By Cable*)—Domestic and export markets throughout Europe remain unsatisfactory. In France current financial reports show iron and steel producers have been losing money and dividends have been reduced. Sharper competition is noted among German, French and Belgian steelmakers. STEEL's correspondent at Berlin states export sales are receding, although substantial inquiries still are being circulated.

The iron and steel markets in Great Britain are uniformly dull. The Barrow Hematite Steel Co. is closing its steelworks. Benson, Pease Co., British engineering firm, has received an important soviet contract for constructing a blast furnace.

The daily rate of pig iron production in Great Britain in April, 10,733 tons, was 5.9 per cent lower than in March. Total output for the month was 323,200 tons. The number of stacks in blast at the close of April was 78, a net loss of three in the month.

Output of steel ingots and castings, on a 30-day basis, averaged about 13,167 tons in April, a decline of 18 per cent from March. Total output for the month is estimated at 395,000 tons.

British Exports Meeting Severe Competition

London — Iron and steel export trade again is experiencing a dull period and prices are weak. Reports from Brussels, one of the leading European iron and steel export centers, are unsatisfactory. While a little more activity has been noted in Far Eastern markets, business with South America is at a standstill. Although German and Luxemburg producers are not competing keenly just now, there is strong competition between Belgian and French producers for any business to be obtained. The only feature worth noting is a contract reported to have been passed to the French Pont-a-Mousson works for a tonnage of cast iron pipe for China. The Germans have received an order for five locomotives from the railroads of Latvia.

In Germany, prices are a shade firmer than in France, Belgium and Luxemburg, as German steelmakers are in a slightly stronger position, owing to orders booked from Russia. Negotiations are being carried on between some German and Luxemburg concerns with Far Eastern buyers for substantial tonnages of steel. Continental prices for wire products are tending downward.

Far East Buys Sheets

In Great Britain, iron and steel export markets are practically stagnant, although some orders have been received for sheets for the Far East, most of these orders having been placed in Scotland. The British still are complaining of the dumping of Indian pig iron, and from reports received from the Continent Indian iron is beginning to make its appearance also in Continental Europe. British foundry pig iron exports are reduced to a minimum, as prices are not competitive, while a few orders continue to be taken for East Coast hematite. Low offers for Continental steel continue to be made in the Midlands, but British users are not anxious to buy at present, as they hope that prices will drop further, and also because they are well stocked.

British Firms Get Orders

Among important engineering orders recently obtained in Great Britain are the following: Steel bridgework for the Egyptian state railways, placed with P. & W. MacLellan Ltd., Glasgow; an order for iron pipes passed by the crown agents for the colonies to the Stanton Ironworks Co. Ltd., Nottingham; electrical equipment for blooming and rail mills for Russia, obtained by Metropolitan-Vickers Electrical Co. Ltd., Manchester, stated to be worth £200,000.

Babcock & Wilcox Ltd., London, also has acquired a contract for the supply of boiler plant to the value of £50,000 for Russia. Mirrlees, Bickerton & Day Ltd., Stockport, has obtained a contract for the supply of engines of from 50 to 180 brake horsepower to Ceylon, India, Federated Malay States, and the Alexandra waterworks. Yugo-Slavian owners have ordered a passenger

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 11	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3**.....	$14.22	2 18 6*	$12.15	2 10 0	$12.15	2 10 0	$12.15	2 10 0
Basic-bessemer..	14.58	3 0 0	11.54	2 7 6	11.54	2 7 6	13.37	2 15 0
Hematite, Phos. .02-.05	16.16	3 6 6	.....	.....	.....	.....	17.01	3 10 0
SEMIFINISHED STEEL								
Billets	$26.12	5 7 6	$16.04	3 6 0	$16.04	3 6 0	$16.04	3 6 0
Wire rods.....	41.31	8 10 0	24.30	5 0 0	24.30	5 0 0	24.30	5 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.68c	7 15 0	.81c	3 14 0	.81c	3 14 0	.86c	3 18 0
Structural shapes.....	1.68c	7 15 0	.74c	3 7 6	.74c	3 7 6	.75c	3 8 6
Plates.....	1.79c	8 5 0	.94c	4 5 0	.94c	4 5 0	.99c	4 10 0
Sheets, black, 24 gage	1.90c	8 15 0	1.80c	8 4 0	1.80c	8 4 0	1.84c	8 7 6
Sheets, gal., 24 ga. corr.	2.71c	12 10 0	2.28c	10 7 6	2.28c	10 7 6	2.31c	10 10 0
Bands and strips	2.06c	9 10 0	.96c	4 7 6	.96c	4 7 6	.96c	4 7 6
Plain wire, base	2.06c	9 10 0	1.08c	4 18 6	1.08c	4 18 6	1.10c	5 0 0
Galvanized wire, base..	2.39c	11 0 0	1.43c	6 10 0	1.43c	6 10 0	1.40c	6 7 6
Wire nails, base	2.39c	11 0 0	1.10c	5 0 0	1.10c	5 0 0	1.16c	5 5 0
Tin plate, box 108 lb...	$ 3.77	0 15 6	.....	.....	.....	.....	$ 8.26	1 14 0

Domestic Prices at Works or Furnace—Last Reported			French Francs		Belgian Francs		Renten Marks	
Fdy. No. 3 Pig Iron**	$14.22	2 18 6	$11.93	305(2)	$13.07	470	$18.58	78
Basic pig iron.....	14.58	3 0 0	12.71	325(1)	11.68	420	20.37	85.50
Furnace Coke.....	2.92	0 12 0	5.67	145	5.14	185	5.10	21.40
Billets	26.12	5 7 6	19.16	490	17.24	620	26.32	110.50
Standard rails.....	1.79c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars.....	1.68c	7 15 0	.92c	510	.88c	675	1.38c	128
Shapes.....	1.90c	8 15 0	.99c	550	.87c	670	1.35c	125
Plates	1.95c	9 0 0‡	1.26c	700	1.02c	785	1.58c	147
Sheets, black, 24 gage	1.90c	8 15 0	2.21c	1,225	1.89c	1,450	1.26c	117
Sheets, gal. 24 ga., corr.	2.39c	11 0 0	2.57c	1,425	2.54c	1,950	3.56c	330
Plain wire.....	2.06c	9 10 0	1.98c	1,100	2.08c	1,600	2.24c	207
Bands and strips.....	2.06c	9 10 0	1.22c	680	1.39c	1,075	1.60c	148

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.92) f. o. b. Ferromanganese £16 9s 0d ($79.95) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

ON THE 7 SEAS

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CONDENSER TUBES

SINCE the early days of steam power, the rapid corrosion of condenser tubes subjected to salt water has been a serious problem.

However, Nickel alloys—because of their exceptional resistance to corrosion at high pressures and temperatures—have come to the rescue . . . have lengthened the service life of condenser tubes, reduced overhaul costs, and actually paid their own way. As a result, the admiralties of seven foreign countries, as well as the commercial fleets that ply the seven seas, now make it standard engineering practice to specify Nickel-copper alloys for condenser tubes.

When added to copper (or brass, bronze, cast iron, steel, stainless steel or aluminum), Nickel imparts one or more of these desirable properties: (1) corrosion and wear-resistance; (2) grain refinement; (3) increased strength and toughness; (4) increased hardness.

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steamer, to carry about 200 passengers, from Lithgowa Ltd., Port Glasgow.

French Steel Prices Seem To Be Scraping Bottom

Paris—Business on the French iron and steel market continues rather dull. It is felt that business generally is handicapped by the fact that although it is known that considerable capital is available, a substantial amount of this capital is locked up in bank deposit accounts, and that confidence is not sufficiently re-established to induce capitalists to invest their money in industry. Iron and steel manufacturers would be glad to see the plan for national equipment carried on faster.

Great expectations had been aroused during M. Tardieu's term of office, but under the present government the schemes which would have called for large tonnages of iron and steel have been put off, more or less indefinitely. Following the large deficit sustained by French railroad companies last year, these companies made an application for increased rates. Of course, serious opposition was aroused by this proposal and it has been decided that the railroad companies are not to increase their rates, but are to make up losses by stringent economy, which means reduced orders for iron and steel works.

Recently demand from agricultural sections has increased. There are good expectations for the coming crop, and this has resulted in a better feeling among farmers. While most iron and steel works are kept fairly busy, prices do not yield profit, and in many cases it is found that losses are accumulating. It is believed the bottom level for domestic prices now has been reached, as these prices are about equal to those quoted for export.

There is little change in pig iron although some imports of Dutch iron have been reported. The semi-finished steel and structural steel syndicates have maintained prices at the previous level, but the wire rod syndicate has reduced the basis price for wire rod by 25 francs per ton, to 760 francs ($29.75) at works. The merchant bar market is weak, and reinforced concrete bars now are quoted at 430 to 450 francs ($16.80 to $17.60). A contract for angles, mixed specification, has been taken by a works in the center of France at 435 francs ($17). The average price for merchant bars is about 470 francs ($18.40) in the east and about 500 francs ($19.60) in the north of France.

Britain Holds Output Rate

London—Production of pig iron in Great Britain in March increased over February with practically the same daily rate. The March output of steel ingots and castings also was larger than in February. Comparisons follow, in gross tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	**338***	**855,000**	**638,600**
1928	132	550,800	710,000
1929	162	632,400†	803,000†
1930	76	516,400	608,200†
1931			
Feb.	81	318,200	486,400
March	81	357,100	500,100

(*) Average for year.
†Revised figures.

German Trade Is Off

Berlin—Exports of pig iron, ferroalloys and other iron and steel products from Germany in February declined from January.

Imports of pig iron and ferroalloys into Germany in February were less than in January. Imports of other iron and steel products increased. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1928	25,535	174,250	24,585	394,575
1929	14,765	137,435	36,115	448,330
1930	14,340	94,320	19,000	380,500
1931				
Jan.	9,962	68,329	9,842	362,912
Feb.	9,125	80,394	8,116	318,228

German Output Below 1930

Berlin—The output of pig iron in Germany in March brought the total for the first quarter of the year to 1,683,285 metric tons, against 3,064,299 tons in the corresponding period of 1930, a decrease of 45 per cent. The output of steel ingots and castings for first quarter was 2,343,555 metric tons, compared with 3,652,664 tons for the first quarter of last year, a decrease of 35.8 per cent. Comparisons follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings	Finished steel
1913*	204	910,000	993,000	970,000
1928	101	985,000	1,210,000	881,000
1929	95	1,117,000	1,354,000	940,000
1930	63	808,000	962,000	679,000
1931				
Jan.	61	603,104	772,776	539,850
Feb.	53	520,176	759,633	527,436
Mar.	56	560,005	811,146	583,428

*In present boundaries.

Belgium Makes Less Steel

Brussels—Output of pig iron in Belgium in March brought the total for first quarter to 773,830 tons, compared with 1,000,520 tons for the corresponding period of 1930, a decrease of 22.6 per cent.

Output of steel ingots and castings in first quarter was 738,670 metric tons, compared with 1,020,830 tons in the first quarter of 1930, a decrease of 27.6 per cent. First quarter finished steel showed a decrease of 31.5 per cent. Comparative figures follow, in metric tons:

Mon. ave.	Coke	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	.....	207,000	205,000	155,000
1928	494,000	.....	325,000	328,000	281,000
1929	499,000	58	341,000	344,000	296,000
1930	447,000	44	283,000	282,000	232,000
1931					
Jan.	417,100	45	270,360	263,120	173,290
Feb.	380,130	44	240,210	227,880	193,010
Mar.	420,360	43	263,260	247,670	200,010

French Coke Output Off

Paris—The output of coke at French collieries in February declined from January, while imports and exports increased. Comparative figures follow, in metric tons:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1928	366,660	447,330	34,810
1929	397,435	453,720	39,070
1930	421,235	380,460	27,505
1931			
Jan.	423,789	326,007	23,116
Feb.	397,964	330,094	27,836

Belgian Trade Is Small

Brussels—A further drop was registered in exports of iron and steel from Belgium and Luxemburg in January and imports also fell off. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930	33,350	28,000	9,600	343,400
1931				
Jan.	25,432	28,400	7,980	285,300

Reviews German Industry

Complete data on rationalization of German industry are presented in a publication of the National Industrial Conference board, New York, viewed from the standpoint of the economist and industrialist.

The volume is entitled "Rationalization of German Industry." A chapter is devoted to the cartel or combine system as applied to the iron and steel industry. All cartels in this branch of industry have been renewed for ten years from Feb. 1, 1930, indicating satisfaction with results. Effects of this rationalization are seen in increased size and reduced number of establishments, fewer workers and increased output per worker. Figures on these changes are given.

Kroh Wagner Machine Mfg. Corp., Chicago, has increased its capital from 100 to 250 shares no par value and directors from 3 to 6.

No Menace, Now, to Europe In Soviet 5-Year Plan

(*Concluded from Page* 16)

30, showing an increase of 8 per cent.

It is naturally impossible to foresee the respective trends of production in Russia and in the rest of Europe during the next three years, but the accompanying table does show that while European steel production generally is influenced by trade fluctuations, Russia is consistently increasing her output.

It is true that Russian production is not keeping step with the schedule laid out in the revised 5-year plan. However, there is no doubt that old works are being modernized and extended, and new works erected in accordance with the plan, and that as means of production are increasing, output will continue to increase, especially as there is a tremendous potential market for steel products in Russia, whatever may be the conditions in other countries.

That Russia may produce anything from 10,000,000 tons of steel upwards by the end of 1933 is a reasonable assumption, and she may well rank, easily, immediately after Germany, if not become the largest producer of steel in Europe.

Thus, from the point of view of productive capacity, as well as from the standpoint of actual output, the relative position of Russia in Europe as a steel producer will undoubtedly be considerably stronger a few years hence than it now is, and Russia may eventually become the dominating factor from the point of view of output.

What Effect on Foreign Trade?

The most important point to consider, however, is the effect, if any, that this factor may have on the foreign trade of other European countries.

First let us consider imports of foreign steel into Russia. Only three countries in Europe consider their steel exports to Russia of sufficient importance to show them separately in their foreign trade returns. Germany leads, followed by Czechoslovakia and Poland. In 1929, Germany's iron and steel exports to Russia were about 125,000 tons; in 1930, shipments increased to 135,000 tons. For Czechoslovakia and Poland, figures are available only for 1929, and in each case they range from 80,000 to 100,000 tons. In addition, Sweden and Austria may have together exported from 12,000 to 15,000 tons at the most.

Although Russian iron and steel import figures are not available, the tonnage for 1930 can be roughly estimated at 325,000 tons. (Since the beginning of 1931 Russia has placed at least 250,000 tons in Germany and Poland.) Compare this figure with the combined exports of Great Britain, Germany, France and the Saar, Belgium and Luxemburg: In 1930 these combined exports were about 15,500,000 tons.

It is obvious, even on the basis of approximate figures, that the Russian market for iron and steel is of quite secondary importance to the rest of Europe as a whole, and that when Russia produces enough to meet her requirements and to cease having to buy steel from other countries, Europe should not be seriously disturbed.

Poland, of course, would be affected, as Russia absorbs at present about 65 per cent of that country's exports. For Czechoslovakia, shipments to Russia are from 15 to 20 per cent of the tonnage exported. On the other hand, Russia would not suddenly drop out of the market during her period of reconstruction, and the affected countries should not be taken unawares.

Future Dumping Is Feared

There remains the question of Russia's competitive power in markets foreign to her own. With respect to the posibilities of normal competition on the part of Russia, we would refer the reader to the conclusions arrived at by H. J. Freyn in STEEL, March 19, which shows that Russia should not be a dangerous competitor. It is feared in Europe, however, that eventually Russia may resort to dumping methods such as have been used for wheat and timber.

Without going into long developments, it appears at least unlikely that a reorganized Russia, such as would exist if the 5-year plan were successfully completed, would find it in her interest to adopt such methods for iron and steel. In any case, the interested countries could adopt concerted measures to counteract or prevent dumping.

This discussion is not intended to lead to any prophecy. It does point to certain reasonable conclusions, based on present-day facts and figures; mainly that Russia is on the way to becoming one of the leading steel producers of the world, but not necessarily a dangerous competitor on world markets, nor is she a sufficiently important customer to cause much loss to others if she ceases from buying iron and steel from outside sources. But if Russia determines to capture, by fair means or foul, a considerable amount of world trade—that is another matter.

We would, however, qualify these conclusions by saying that during her period of reconstruction, Russia is purchasing from the United States, Germany and other countries, a considerable amount of machinery and plant equipment, which calls for substantial tonnages of iron and steel manufactured in the country of origin.

As the 5-year plan provides for the complete industrial re-equipment of Russia, that country eventually would be in a position to manufacture her own plant machinery. This aspect of the question may be worth considering.

To Present Papers Before Steel Institute Meeting

(*Concluded from Page* 19)

mained until 1920. Experience with Electric Alloy Steel Co., Charleroi, Pa., Atlas Steel Corp., Dunkirk, N. Y., and United Alloy Steel Corp., Canton, O., followed. After the merger of the latter with Central Alloy Steel Corp., he became chief mechanical engineer, and when it went into Republic Steel Corp. he continued in a similar capacity. When the Research corporation was formed he assisted F. J. Griffiths, president. Later he was elected vice president.

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WILLIAM M. HENRY, chief engineer, Newburgh works, American Steel & Wire Co., Cleveland, collaborated with Thomas J. McLoughlin in the preparation of "A Thermal Study of an Open-hearth Furnace." He was employed in 1898 in mills and blast furnaces of Cleveland Rolling Mills Co. and then in turn became associated with Wellman-Seaver-Morgan Co., now Wellman Engineering Co., Cleveland, Riter-Conley Co., Pittsburgh, and Payne Bros. Iron Works, Newark, N. J. In 1913 he returned to Cleveland to American Steel & Wire Co., which succeeded Cleveland Rolling Mills Co. Since 1925 he has been in charge at Newburgh works.

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THOMAS J. McLOUGHLIN, fuel engineer, Duquesne works, Carnegie Steel Co., Pittsburgh, who collaborated with William M. Henry in the paper on "A Thermal Study of an Open-hearth Furnace, has been identified continuously with the Carnegie company for about 17 years. For ten years he was engaged in various operating capacities in blast furnaces, open-hearths and rolling mills, but latterly has been identified with fuel.

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VICTOR WINDETT, manager, gas producer division, Wellman Engineering Co., Cleveland, will present "A Review of Certain Gas Producer Practice." He spent about 12 years at South works, Illinois Steel Co., Chicago, doing mechanical engineering, fuel testing, etc. As civil engineer he had charge of considerable concrete dock, steel plant and other construction and engaged in bessemer furnace metallurgical work. For a time he represented Julian Kennedy, Pittsburgh, at Chicago, participating in the design and having charge of construction of Iroquois Iron Co.'s two blast furnaces, Railroad and general contracting work followed and then as engineer for Wellman-Seaver-Morgan Co., Cleveland, he built open-hearth furnaces for the government at Watertown, Mass., sulphuric acid plants in Wisconsin, and barges. He became engineer for Wellman Engineering, then manager.

Machinery

PRICES are being maintained firmly by the machine tool industry, in spite of the fact that hopes for recovery now are deferred to next fall. This is indicative of a backbone in this industry which never before was apparent under similar conditions. Sales managers by no means are inclined to await passively for recovery, but continue to work vigorously on prospects, with numerous new and improved models. Reports from Chicago continue to be less gloomy than from elsewhere, and while railroad buying is being postponed, there is hopeful activity among builders of road machinery and excavating equipment, particularly in the Milwaukee district.

New York—Machine tool buying and inquiry has reached the lowest point of the year. Sales of equipment for general lines of industry not only are few, but are limited to single units. Fresh inquiry is light and possibility of early closing on the bulk of inquiry which has been pending for weeks grows more remote. As a matter of fact, some of this inquiry even has been withdrawn. General Electric Co. recently closed on a large lathe and certain government departments are taking a few tools.

Resumption of machine tool activity appears to be contingent upon recovery of manufacturing in general, although there lately have been cases where attractive orders for metal products have precipitated sudden demands for equipment. Most dealers and builders, however, are of the opinion that no pronounced improvement is likely now before fall.

Pittsburgh—Individual orders for machine tools are slightly more numerous but general activity in the market continues at a low level. Inquiry also is slow and fails to show improvement over the rate of the past two months. Inquiry usually calls only for single tools. Westinghouse Electric & Mfg. Co. is not expected to take any immediate action on its recent list. Railroads are inactive in new tool buying.

Worcester, Mass.—The machinery market shows little change this week. Domestic activity is almost negligible, save for an occasional order for a single unit from the Navy department and some scattered inquiry. Throughout New England generally the equipment business is stagnant and expectations are that this condition will continue through the summer.

A number of Worcester shops are keeping moderately busy, however, turning out products on foreign orders, this being especially true among manufacturers of grinders. Most of this equipment is going to Russia. This Russian business in Worcester includes a large number of machines for making all types of automotive springs.

No further word has been forthcoming from the Simonds Saw & Steel Co., Fitchburg, Mass., regarding the period of postponement of the opening of its new plant. As was expected, this company's request for cancellation of orders for new equipment for the plant has met with general opposition on the part of suppliers.

Cleveland—With the exception of scattering orders for single machines and a fair volume of tools and parts business, the machine tool market here remains inactive. Machines being built on Russian orders rapidly are being completed and considerable doubt exists as to the active continuation of business in that direction.

In spite of the fact that hopes for late spring recovery definitely have faded, sales managers in this vicinity by no means are inclined to await passively for the fall recovery which now is predicted. With some decidedly improved models to promote, no legitimate means are being overlooked to impress prospects. Price cuts do not figure in this sales pressure to any discoverable degree.

Chicago—Chicago board of education has taken bids on the long-awaited revised inquiry list for the Austin High school. The inquiry comprises twenty-four 13-inch lathes, a milling machine, 16-inch shaper, and 42-inch shaper-planer. This is the only list of consequence submitted during the week. Northern Pacific railroad is taking figures on equipment for inquiry purposes, while Santa Fe is rounding out purchases against its extensive list. Other railroads have not bought. It is probable the St. Paul may not take action on its list of about 75 items for several weeks.

A harvester manufacturing company has placed its first inquiry before the market in more than a year. Bids on several drills are asked. Illinois Central railroad will buy a metal-cutting bandsaw and a few other small items. It now is reported that A. O. Smith Corp., Milwaukee, will not place the equipment for its new research building before late summer or early autumn. One or two road machinery and excavating equipment makers are expected to buy during the summer. Machine tool builders and dealers continue to resist pressure from buyers for price reductions, the chances for thus stimulating business being regarded as negligible.

Air Corps Seeks Bids on Machines and Material

Washington — Contracting office, material division, army air corps, Wright field, Dayton, O., takes bids May 26 on three motor-driven sheet metal cutters, two motor-driven squaring shears and three hand operated sheet metal brakes. On May 20 the same office closes bids on one rotary shear, one turning machine, one wiring machine and 30 setting down machines. Also on this same date bids close on 20,000 feet of telephone cable for Wright field. Bids will be taken May 19 on 80 nine-foot propeller blades. Three motor-driven shaping planers are up for bids May 19. Department of agriculture takes bids on May 15 covering one laboratory press of hydraulic type.

Machinery Export Total Shows Gain in March

Washington — Announcement is made by industrial machinery division, department of commerce, that industrial machinery exports from the United States in March registered a slight advance over the total of the preceding month. The March total was $12,711,670, and while this represents a considerable drop below the total for March, 1930, it still indicates substantial business, approaching as it does the totals for corresponding periods in 1927 and 1928.

Volume of exports of metalworking machinery, which maintains position as the leading item, is the most encouraging feature of the first quarter of 1931. With value of $10,500,000 during these first three months, it must be considered as highly creditable in view of the persistent drop in purchasing power abroad. Achievement of this volume was due to a considerable extent to large foreign orders for power driven metalworking machinery, sheet and plate working machines, forging machinery and lathes in particular.

Personals

(Concluded from Page 23)

tion of the entire floating equipment of the Carnegie company.

Capt. L. Calvin L. Blazier also has retired, having rounded out 53 years of active service on the rivers. He had been with the Carnegie Steel Co. since it made its first shipment of steel by river 13 or more years ago.

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Edward K. Bauer, who on April 15 became manager of sales in the Philadelphia district for Carnegie Steel Co., Pittsburgh, when the Washington and Philadelphia districts were separated, has been associated with subsidiaries of United

Photo by Blank & Stoller Inc.
Edward K. Bauer

States Steel Corp. for 25 years. He was employed at Pencoyd, Pa., works of American Bridge Co. June 12, 1906, and in 1910 was transferred to Philadelphia district sales office of the Carnegie company. In 1926 he was appointed assistant district manager of sales, and upon the death of James B. Bonner in April became manager of sales.

Mr. Bauer was born in Philadelphia and attended high school there. He attended business college and later finished his education at the University of Pennsylvania.

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E. D. McNeil, Bessemer, Mich., superintendent of mines for Corrigan, McKinney Steel Co., Cleveland, has resigned.

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Frank M. Germane, for the past five years president of Bearings Co. of America, Lancaster, Pa., has become special sales representative at Detroit for the Budd Wheel Co., Philadelphia.

Burton W. Brodt, who for four and one-half years has been sales manager of Firestone Steel Products Co., Detroit and Akron, O., has rejoined the Budd Wheel Co.'s sales staff after an absence of several years.

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W. W. Wilson, General Motor building, Detroit, has been appointed agent for Alloy Metal Wire Co. Inc., Moore, Pa.

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G. A. Pugh, vice president of Aetna-Standard Engineering Co., Youngstown, O., has returned after a 2-month tour of England, Germany, France, Holland and Belgium.

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Edward N. Hurley, chairman of Electric Household Utilities Corp., Chicago, has been elected a director of United States chamber of commerce.

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C. N. Osborne, secretary and treasurer of M. A. Hanna Co., Cleveland, has been elected a director of the National Steel Corp., Pittsburgh, in place of the late C. A. Collins.

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James C. Armer, vice president of Dominion Forge & Stamping Co., Walkerville, Ont., was recently named chairman of the Ontario division of the Canadian Manufacturers' association.

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E. L. Ryerson Jr., president of Joseph T. Ryerson & Son Inc., Chicago, has been chosen to represent the American Engineering council on the advisory board of the Museum of Engineering and Industry.

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John B. O'Neill, director of engineering for Houde Engineering Corp., Detroit, resigned recently. Prior to becoming identified with the Houde company, he was assistant sales manager for General Spring Bumper Corp., Detroit.

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J. C. Milner, formerly vice president of the Canadian division of the International Business Machines Corp., New York, was recently made sales manager of the company's new industrial scale division. His headquarters are at the home office in New York.

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G. O. Frostad formerly with the Brook's Machinery Co. and Wisconsin National Fibre Can Co., is in active management of the plant of Krahn Mfg. Co., Milwaukee, filling the vacancy caused by the death of its president, A. W. Krahn, noted in STEEL of April 23.

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J. P. Hilands has resigned as eastern sales representative of Ohio Seamless Tube Co., Shelby, O., having served in that capacity for many years.

W. S. Thompson, identified with the New York office of the company, has been appointed to succeed Mr. Hilands.

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C. F. Herington, contracting engineer, for the past nine years in charges of sales, engineering and erection of pulverized coal plants for Heyl & Patternson Inc., Pittsburgh, has established headquarters at 1440 Broadway, New York, where he will specialize in the design, sale and erection of pulverized coal and pneumatic and mechanical handling equipment, including cranes.

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Harry F. Knapp, appointed Washington district manager of sales for Carnegie Steel Co., Pittsburgh, as noted in STEEL of April 23, has been associated with the Carnegie company for more than 25 years, largely with the Philadelphia sales organization. Prior to that he was with American Bridge Co. for a short time. A few years ago he was appointed Philadelphia district assistant manager of sales with headquarters in Washington.

Harry F. Knapp

During the World war he was stationed in Washington, assisting the late James B. Bonner in the work of the American Iron and Steel institute's subcommittee on steel distribution.

Shortly after the death of Mr. Bonner last month, the Philadelphia territory was divided and Mr. Knapp was made manager of sales of the Washington district, which in addition to the District of Columbia, includes Virginia and Maryland.

Born in Ohio, Mr. Knapp spent his early years in Atlanta, Ga., graduating from high school there. Later moving to Philadelphia, he attended Drexel institute and then continued his education at the University of Pennsylvania.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Mario Wrought Iron Corp. has been incorporated with 5000 common shares by Mario I. Merriam, Boston, J. Weston Allen, Newton, Mass., and Henry W. Packer, Wellesley, Mass.

BOSTON—Bureau of yards and docks, navy department, Washington, will receive bids May 25 for a locomotive crane, gasoline operated, to be installed at the marine railway here.

BOSTON—Eastern Smelting & Refining Co., 107 West Brookline street, advises through Maurice G. Alperin, vice president, that fire recently noted did not damage the company's plant, but occurred at some property in which the company had an interest. Eastern Smelting & Refining company's plant was not involved. (Noted April 30.)

HOLYOKE, MASS.—Department of public works has let contract for construction of a 3-story, 70 x 230-foot vocational school to be built at Pine Beech and Franklin streets. Estimated cost, $133,000.

LYNN, MASS.—Hansen Engineering & Machinery Co., organized by S. M. and Holger Hansen, 10 Oakcrest street, Saugus Center, Mass., with $10,000 capital, will operate a foundry and machine shop here.

BAKERSFIELD, VT.—Machine shop of E. W. Powers recently was virtually destroyed by fire.

New York

BALDWINSVILLE—City officials are in contact with Don-Bar Mfg. Co., D. G. Lewis production manager, in preparing plans for establishment of a plant here for the manufacture of pressing machines and other metal products. Proposed industry would employ 40, taking over the Penn Spring works. Virgil Clymer, Syracuse, N. Y., attorney, is interested.

BROOKLYN—Bureau of supplies and accounts, navy department, Washington, will receive bids May 26 on schedule 5714 for 10 pneumatic chipping hammers.

BROOKLYN—Board of education, 500 Park avenue, New York, is having plans prepared for a high school to be built at Jamaica avenue and Seventy-sixth street, to include a machine shop. C. W. Martin, Flatbush avenue extension and Concord avenue, Brooklyn, is architect. Approximate cost, $3,000,000.

BROOKLYN—Reich-Ash Corp., 307 Fifth avenue, New York, has leased a 9-story plant at Degraw street and Tiffany place, here, and three companies, Silvercraft Specialty Co., Green Metal Novelty Corp. and Antique Novelty Box Co., operated by the Reich-Ash company, will move operations to the new location. Floor space available totals 95,000 square feet.

BUFFALO—DuPont Cellophane Co., 2 Park avenue, New York, has plans for a plant addition here. Estimated cost, $2,000,000.

BUFFALO—Buffalo Electric Furnace Corp., River road, Tonowanda, will improve its plant. Expenditure will approximate $100,000.

NEW YORK—Portable Air Hammer Co. has been incorporated with $50,000 and 5000 common shares by Kieffer & Woodward, 31 Nassau street.

NEW YORK—Consolidated Gas Co., Irving place, has let contract for construction of a 3-story shop to be erected at 1160 York avenue. Estimated cost, $350,000.

NEW YORK—Chefford Automotive Parts Inc. has been incorporated with 100 common shares by Porte & Porte, Jamaica, N. Y., to engage in a machine shop business.

NEW YORK—Steel-Clad Products Co. has been incorporated with $50,000 capital by H. J. Bloomer, 527 Fifth avenue, to make cartons and barrels.

ONEIDA—Line Material Co., recently incorporated with $10,000 capital, has started production on transmission line equipment. Strip and sheet metal will be required. H. J. Dowling, Oneida, and W. D. Kyle and W. S Pierick, Milwaukee, are officers of the company.

ROCHESTER—Pierce Specialty Corp. has been incorporated with 200 common shares by J. P. Doyle, 19 West Main street, to deal in metal products.

WHITE PLAINS—Buckbee Construction Co., 162 East Post road, plans to build a shop and office building at Ridgeway, near here, to cost $40,000.

New Jersey

CRESSKILL—Harris Bros. Co. will erect a 2-story plant for the production of building materials. Expenditure will approximate $100,000. Plans are private.

Pennsylvania

PHILADELPHIA—Beemer Engineering Co. has been incorporated with $50,000 capital by Frank Beemer, 1172 North Sixty-third street, George H. Atherholt, Merion Golf Manor, Ardmore, Pa., and Leslie Edgecomb, Cynwyd, Pa., to manufacture and install draft controls and other devices.

PITTSBURGH—Auto-Tite Joints Co. has been incorporated with 5000 no par shares by Edward W. Wright, 5442 Baywood street, Patrick J. Meehan, 3021 Bergman street, and E. C. McHugh, 747 Union Trust building.

PITTSBURGH—American Dioxidyne Corp. has been incorporated with $25,000 capital by James Nelson Lewis, 915 Irwin avenue, E. B. Graham, 359 Negley avenue, and William G. Jones, 5242 Baum boulevard, to manufacture systems for constant pressure fireproof gasoline storage, devices and appliances for internal combustion engines, and other tools and machinery.

WAYNESBORO—Wayne Equipment Mfg. Co. Inc. has been incorporated with $15,000 capital by J. E. Frantz, William H. Strauss and A. H. Moyer, to manufacture and sell machines, testing devices, tools and equipment.

Ohio

ALLIANCE—Guardian Safe & Mfg. Co. has been incorporated with 100 no par shares by Frank W. Andrews, 207 Alliance Bank building.

CANTON—City proposes to replace old centrifugal lift pumps with eight new deep well pumping units. Estimated cost, $25,000.

CLEVELAND—Shaker Heights village, J. W. Main clerk, will close bids May 25 for stokers for two boilers.

CLEVELAND—Parkin Co. Inc. has taken plant space at 4712 Chester avenue northeast, to establish a plant for the manufacture of spark plugs.

CLEVELAND—Board of county commissioners, F. J. Husak clerk, Cuyahoga county courthouse, is in the market for a core drill machine for road improvements.

CLEVELAND—Cleveland Co-operative Stove Co., 2323 East Sixty-seventh street, is remodelling its plant at 6712 Central avenue. Contract is held by John Gill & Sons, Bulkley building. Estimated cost, $25,000.

CLEVELAND — Globe Machine & Stamping Co., 1230 West Seventy-sixth street, has let contract to the Austin Co., 16112 Euclid avenue, for alteration of a boiler house. Company manufactures steel products and automobile accessories. H. L. Gadd is president.

COLUMBUS—Hayes Wire Wheel & Spring Co., 203 East Town street, is building a new plant at the above address. Site has been cleared.

DAYTON—Major R. M. Jones, army air depot, will receive bids May 19 for three 24-inch planer shapers.

LISBON—Roundhouse of Pittsburgh, Lisbon & Western railroad recently was damaged by fire. Estimated loss, $20,000.

MEDINA—Spencer Mfg. Co. is constructing a plant addition which will provide 7000 additional square feet of floor space. Company manufactures automobile axles, shafts and gears. J. B. Childe is general manager.

PIQUA—City is considering erection of a power plant. Plans are being pre-

pared by Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo.

WELLSTON — Wellston Heating & Sheet Metal Co. has been formed here by William Turvey and Coss Rollins. Operations will be conducted in the Leach building. Machinery and equipment of a former local concern have been acquired.

Indiana

HARTFORD CITY—Albert Pitts, formerly of Montpelier, Ind., is establishing a foundry here for the production of gray iron and semisteel. Construction work has been started on a small scale.

INDIANAPOLIS—Hercules Mfg. Co., manufacturer of automobile accessories, will continue operations following recent fire. Loss, estimated at $15,000, was principally to stock. Stewart H. Kurtz is president. (Noted May 7.)

Michigan

ANN ARBOR—American Broach & Machine Co. has let contract for the design and construction of additional plant facilities to the Austin Co., 16-112 Euclid avenue, Cleveland. Plant, to cost $25,000, will be 40 x 92 feet. F. J. Lapointe is president.

DETROIT—Oroxo Grinding Wheel Co., 693 Monroe avenue, has been incorporated with 100,000 no par shares by Charles J. Butler, 1507 Iroquis avenue, to manufacture and sell abrasive materials.

DETROIT—Ilewill Mfg. Co., 37 Manchester avenue, Highland park, has been incorporated with 145,000 no par shares by Addison E. Holton, 1902 Buhl building, to deal in and manufacture wire and cable.

HOUGHTON—Fred C. Jenkins is establishing a machine shop at 647 Fourth street. Equipment has been secured.

Illinois

CHICAGO—Engineers Mfg. Co., 108 North Jefferson street, has been incorporated with $100,000 capital by Francis J. Sullivan, to deal in iron, machinery and steel.

CHICAGO — Century Airlines Inc., 5032 West Sixty-third street, will erect a hangar and terminal unit with repair facilities at municipal airport. Plans are under way. Cost, with equipment, is estimated at $75,000.

CHICAGO—Hatz-Kummer Marek Inc., 910 West Van Buren street, has been incorporated by Reinhardt & Robb, First National Bank building, to deal in metal products.

CHICAGO—A. H. Arnold & Co., 718 West Randolph street, manufacturer of creamery supplies, will remodel a 4-story plant at 811 Rees street. J. B. Fischer, 140 South Dearborn street, is architect.

CHICAGO—Herbert H. Davis Co., 4146 South Western avenue, sheet metal, has a building permit for erection of a shop, 22 x 47 feet. Webster & Allen, 225 North Michigan avenue, are architects. Quist Construction Co., Elmwood park, has the contract.

CHICAGO—Consolidated Signal Co., 29 South LaSalle street, has been incorporated with 10,000 no par shares, by Gardner, Foote & Morrow, 134 South LaSalle street, to deal in electrical signs and devices.

CHICAGO — Peoples Gas Light & Coke Co., 122 South Michigan avenue, has a building permit for erection of a 2-story brick compressor house, 74 x 148 feet, at 9719 Baltimore avenue. R. Schenk, 122 South Michigan avenue, is architect. Robert Black Co., 122 South Michigan avenue, is contractor. Estimated cost, $100,000.

Southern States

WASHINGTON—Board of trustees, National Training School for Boys, will build and equip an industrial shop building, at a cost of about $150,000. Clyde D. Jones is superintendent.

WASHINGTON—Bureau of supplies and accounts, navy department, Washington, will receive bids May 19 on schedule 5386 for abrasive wheels, quantity unstated, for the fiscal year ending June 30, 1932, kind and quantity to be specified in release orders. Bids will be taken in discounts from list price.

MOULTRIE, GA.—City council has proposal for construction of a power plant. Estimated cost, $100,000. Bond issue is to be voted on.

HARLAN, KY.—Electric Automatic Call System Co. has been incorporated with $50,000 capital by Ben Lewallen and J. A. Cecil, to deal in apparatus and devices.

NEW ORLEANS—Southwest Neon Sign Co., M. E. Hart vice president, Houston, Tex., will open a branch plant here for the production of neon signs, initial operations here to be limited to manufacture of glass tubing. Company is reported to have acquired space with the Hart Enterprise Electric Co. Inc., 826 Barrone street. Later production here will include complete manufacture of signs.

OKOLONA, MISS.—Trustees, Okalona industrial school, propose to rebuild school's industrial plant, recently damaged by fire. Estimated cost, $300,000.

CHARLOTTE, N. C.—Simplex Machine Co. has been incorporated by Ellis W. Henderson, 24 South Tryon street.

GREENSBORO, N. C.—Davie Street Auto Parts Co., 210 South Davie street, is reported in the market for a small lathe for automotive armatures.

ST. GEORGE, S. C.—J. D. Prothro, Aiken, S. C., and Edgar Brown, Barnwell, S. C., are reported to be interested in the establishment of a plant here to process marl rock, project to include a hydroelectric development.

HAMPTON ROADS, VA.—Bureau of supplies and accounts, navy department, Washington, will receive bids May 19 on schedule 5695 for one heavy footpower squaring shear. Bids will be received May 19 on schedule 5696 for one 21-inch, motor-driven, sliding head, upright drill. Bids will be received May 26 on schedule 5714 for seven pneumatic scaling hammers, four to be delivered at Philadelphia.

CLARKSBURG, W. VA.—Osborn Machinery Co. Inc., 424 North Fourth street, plans to rebuild a portion of its plant, recently damaged by fire with loss estimated at $10,000.

FOLLANSBEE, W. VA.—Follansbee Bros. Co., Third and Liberty streets, Pittsburgh, is considering installation of conveying equipment and additional machinery in its local plant.

ROWLESBURG, W. VA.—George Reith and J. G. Gibson are interested in promoting construction of a coal cleaning plant, to cost $300,000.

Missouri

JOPLIN—Board of education, S. A. Harris secretary, has awarded contract for a 2-story junior high school, to include a machine shop. Cost is estimated at $170,000.

KANSAS CITY — Peck-Thompson Sand Co., Railway Exchange building, will install handling and dredging equipment. Estimated cost, $40,000.

LIBERAL—Hufty Rock Asphalt Co. is reported to plan installation of additional equipment and to double mill capacity.

Arkansas

FT. SMITH—W. E. Womble & Sons, 300 Albert pike, will build a 1-story plant for the manufacture of steel fence posts. Work is to be done by owner's forces.

LITTLE ROCK—American Builders Supplies Inc., Arcade building, will establish a plant for the manufacture of metal weather stripping. J. J. Smith is president.

PINE BLUFF—Arkansas Power & Light Co. has started plans for erection of a hydroelectric plant at Blanco Springs dam. Cost, with equipment, $8,000,000.

Oklahoma

OKLAHOMA CITY—Federal Steam Specialties Co., 120 East Main street, has awarded contract to Campbell & Price, 605 West Main street, for construction of a storage and distribution plant, with pipe fitting shop, 30 x 132 feet. Layton, Hicks & Forsyth, Braniff building, are architects. Estimated cost, $25,000.

TULSA—Grand Hydro Electric Co., W. E. Hudson president, Sixth and Peoria streets, has made preliminary preparations for development of a hydroelectric project on the Grand river. Total cost, over $4,000,000.

Texas

TRINIDAD—Texas Power & Light Co. will complete expansion of power facilities following installation here of a 56,000-horsepower generating unit.

Transmission line will be built, to include additional substations.

Minnesota

MINNEAPOLIS—Board of education, F. S. Gram purchasing agent, city hall, will receive bids soon for tools and equipment, including two lathes, two grinders, double-seaming machine and turning machine.

Iowa

SIOUX CITY—Iowa Public Service Co., W. J. Bertke president, will remodel its present power plant on Riverside avenue and construct a building to house a 13,000-horsepower turbogenerator. Cost is estimated at $1,300,000.

Nebraska

LINCOLN—State senate is considering legislation appropriating $50,000 for the erection of a plant for the manufacture of license plates and road markers. Bill has passed house of representatives under sponsorship of W. H. O'Gara.

Montana

BUTTE—State school of mines will add to facilities with an expenditure of approximately $55,000. Plans are being prepared by Walter Arnold, architect, Helena, Mont.

MILES CITY—State board of education, Helena, Mont., plans to build an industrial school here. Estimated cost, $90,000.

Nevada

HAWTHORNE—Bureau of supplies and accounts, navy department, Washington, will receive bids May 26 on schedule 5686 for one motor-driven radial drill.

Idaho

LEWISTON—Northwest Cities Gas Co., J. P. O'Neill manager, will install a second generator and a high pressure gas holder at the Main street plant. Estimated cost, $100,000.

Pacific Coast

LOS ANGELES—Buttress & McClellan, 1013 East Eighth street, propose to build two plant units, 50 x 200 feet. Cost is estimated at $40,000. Company manufactures machinery and parts.

MANHATTAN BEACH, CALIF.—Bids will be received May 21 by M. J. Crandell, city clerk, for a 600 gallons-per-minute turbine pump and motor.

SALINAS, CALIF.—City, M. R. Keef clerk, will award contract for erection of a machine shop.

SAN DIEGO, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids May 26 on schedule 5698 for one motor-driven toolroom precision lathe.

SEATTLE—Pioneer Sand & Gravel Co. has let contract to General Construction Co. for erection of a $20,000 plant building. Mixing and handling equipment will be installed.

SEATTLE—Bureau of yards and docks, navy department, Washington, will receive bids until June 3 on schedule 6482 for an electrically operated 250-ton stationary hammerhead crane, 20-ton traveling tower crane with gasoline electric power and 10-ton traveling gantry crane with gasoline electric power, for the navy yard at Puget sound.

Dominion of Canada

EDMONTON, ALTA.—Acme Brick Co. Ltd., Alberta building, will improve its local plant at an expense of $25,000.

EDMONTON, ALTA.—Burnstead Grading Machine Co. is a new firm here, recently incorporated with $100,000 capital.

EDMONTON, ALTA. — Dominion Bridge Co. Ltd. is reported to plan installation of new equipment in its plant here, and to call for bids soon.

VANCOUVER, B. C.—Universal Machinery Ltd., 1629 Main street, has been incorporated with $10,000 capital to take over and operate the business formerly carried on by Walter W. Fahrni.

ARTHUR, ONT.—City council plans to install a waterworks plant at a cost of approximately $40,000.

GEORGETOWN, ONT. — Smith & Stone Ltd., manufacturer of porcelain and electrical supplies, is having plans prepared for construction of a plant addition for the manufacture of bakelite.

GUELPH, ONT.—Guelph Metal Co. has been incorporated with $40,000 capital by Max B. Enushevsky, to operate as a manufacturer.

KINGSTON, ONT.—Frontenac Floor & Wall Tile Co. proposes to build a plant addition to cost $100,000.

NORTH BAY, ONT.—City council proposes an expenditure of $20,000 for equipment for technical school, to include lathes, shapers, drills and other items.

PORT ARTHUR, ONT.—City council has joined with officials of Ft. William, Ont., to arrange for a site for the Hamilton Coke & By-Products Co. in the two cities. T. F. Milne is clerk of Port Arthur.

SCARBORO, ONT.—W. D. Annis, 1666 Kingston road, Toronto, Ont., secretary of public utilities commission, Scarboro township, is receiving bids for one 1500-gallon (imperial) centrifugal horizontal pump with electric motor and another with gasoline engine.

TORONTO, ONT.—Hayden Gold Mines Ltd., 611 Federal building, Dr. A. E. Davis, president, plans to install a 100-ton mill at its property in Ogden township.

JOLIETTE, QUE. — City engineer E. H. Lippe, city hall, is receiving bids on equipment for a mechanical gravity filtration plant, to have capacity of 3,000,000 imperial gallons. Items include filter equipment and low lift pumps.

New Trade Publications

BELTING—E. F. Houghton & Co., Philadelphia, offer in a current publication four tests of belting to determine its adaptability to use. The tests are illustrated.

HEAT TREATING — Vincent Steel Process Co., Detroit, Mich., has issued a booklet on scientific heat treating for use of persons interested in this subject.

ELECTRIC HOISTS—Wright Mfg. Co., Bridgeport, Conn., has issued a catalog on its Wright electric hoists. Dimensions and other data are included. It illustrates hook and bolt suspension, plain, geared and motor-driven trolleys and drum and low headroom types.

ELECTRIC IMMERSION HEATERS—Comparison of tubular electric heating units and tubular fluid heaters for use with asphalts, tars, oils, varnishes and other viscous substances is presented in a leaflet by H. O. Swoboda Inc., Pittsburgh. Diagrams and charts show temperature gradients of the two types.

ROLLING MILLS—Bulletin No. 201, by the United Engineering & Foundry Co., Pittsburgh, is devoted to hot and cold mills for laboratory work. The mills are designed for laboratory work in industrial plants, research organizations or any use where small-scale operation is desired. They are adapted to hot or cold work on ferrous or nonferrous metals in shapes of all sorts, under all conditions and for all sorts of tests. They are useful in engineering schools, to acquaint students with basic principles of rolling mill practice.

BOILER WATER CONDITIONING—A booklet on the conditioning of boiler water has been prepared by the Elgin Softener Corp., Elgin, Ill. It discusses various problems in treatment of water for boilers. It is illustrated to show various types of scale, sludge, corrosion, pitting and embrittlement, gravity and pressure feeds for control. The application of sludge deconcentrators to various types of boilers and schematic arrangements of deconcentrator and heat exchanger are to guide in laying out boiler plants including these accessories.